

FEBRUARY 1976 75 CENTS

Popular Mechanics

How good a driver are you?
Most people fail these 4 tests!

Make PM's
home bar with
everything
—plus a sink

How to tune in ham
radio's space station

An expert's 23 best
woodworking tips

3 good reasons to buy
a lifetime battery

You can lay a
parquet floor

OHHHH WOW!

YOUR
BOAT GOES
SO
FAST!

STAY
COOL, CHICK!
I'VE GOT
EVERYTHING
UNDER
CONTROL!

PM DRIVES THIS
HOT HYDRO FOIL!

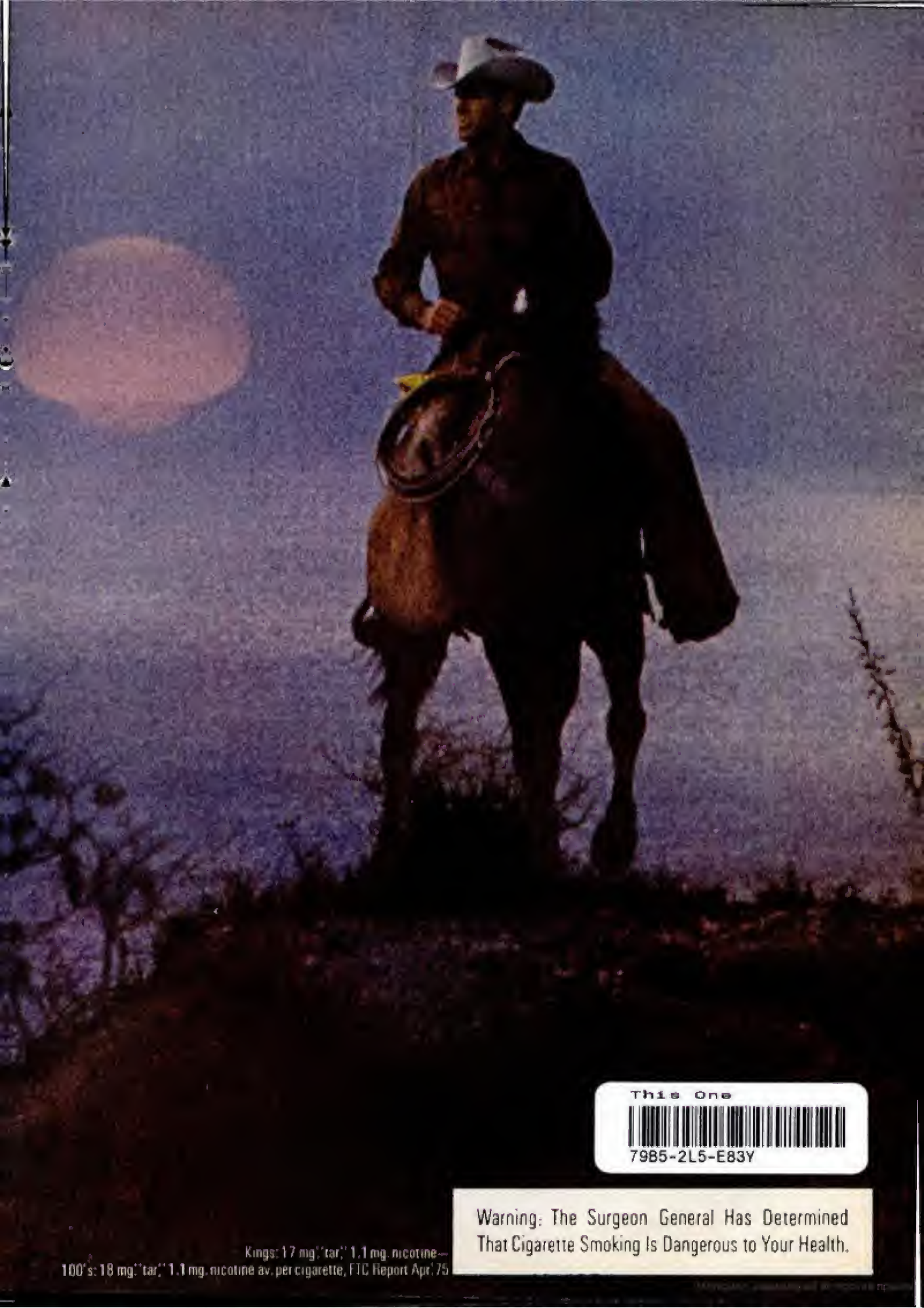
20 BRAND-NEW
BOATS
NEW MOTORS
12 PAGES!

Dick Giordano

**Come to where the flavor is.
Come to Marlboro Country.**

**Marlboro Red
or Longhorn 100's—
you get a lot to like.**





This One



7985-2L5-E83Y

Kings: 17 mg. "tar," 1.1 mg. nicotine—
100's: 18 mg. "tar," 1.1 mg. nicotine av. per cigarette, FTC Report Apr. 75

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

Manufactured by American Tobacco Company, Winston-Salem, NC 27157

AUTOMOBILES AND BIKES

- [18 Imports and Motorsports](#)
- [20 The PM Garage](#)
- [24 Detroit Listening Post](#)
- [67 How to avoid the accident you'd never forget](#)
- [80 All about batteries](#)
- [102 What you should know before you move up to a big bike](#)
- [106 Saturday Mechanic: Tracking down engine misfire](#)

BOATING, OUTDOORS

- [90 The new boats '76](#)
- [90 Year of the class performers](#)
- [94 PM drives a sportboat on stilts](#)
- [96 New push power—big and small](#)
- [96 New gear for your boat](#)

PHOTOGRAPHY

- [32 Photo hints](#)
- [62 Silent film editors that convert to sound](#)
- [64 The shrinking of the zoom](#)
- [88 How to tell when you need a better camera](#)
- [101 'Machine gun' light kits that freeze and fracture action](#)

HOME AND YARD

- [83 Back-yard fish farming for food and fun](#)
- [114 Build this one-of-a-kind home bar](#)
- [118 Parquet floors: Careful preparation is the key to a good-looking job](#)
- [120 Three ways to use a one-car garage and still get the car in](#)

SHOP AND CRAFTS

- [34 Tee game](#)
- [46 Hints from readers](#)
- [109 Low-cost cutoff saw you can make](#)
- [110 23 woodworking tips](#)
- [117 Two for your shop](#)

ELECTRONICS, RADIO, TV

- [76 New satellites make ham listening more fun](#)
- [80 All about batteries](#)

AVIATION

- [72 10 handsome homebuilts you can make and fly](#)
- [74 VariEze: A plane that lives up to its name](#)

SCIENCE AND ENGINEERING

- [36 Instant port for oil tankers](#)
- [84 Strange wars are being fought by our Gulliver force](#)

WORTH WRITING FOR

Looking for more ideas and information? See page 192.

ON THE COVER

PM's Bill McKeown (he should have such biceps) goes flying over the water in a hot new hydrofoil and—shades of Flash Gordon!—cartoonist Dick Giordano renders the event in shamelessly macho fashion.

AS A SERVICE TO READERS, *Popular Mechanics* publishes newsworthy products, techniques and scientific and technological developments. Due to possible variance in the quality and condition of materials and workmanship, *Popular Mechanics* cannot assume responsibility for proper application of techniques or proper and safe functioning of manufactured products or reader-built projects resulting from plans published in this magazine.

Popular Mechanics®

FEBRUARY 1976 • Vol. 145 No. 2

INTERNATIONAL EDITIONS: Australia, Caribbean, Mexico, Southern Hemisphere

SPECIAL FEATURES:

To avoid the accident you'd never forget, you've got to react faster and in a different way than ever before when driving into danger. Page 67.

Special section of 12 pages devoted to BOATS and equipment for this spring. PM's boating editor picks the top new models. Page 90.

What you should know before you buy a big bike gives all the information you need to move up to a large, powerful, comfortable motorcycle. Page 102.

Build this one-of-a-kind home bar—a detailed workshop project that has been designed exclusively for PM readers. Page 114.

Need a spare room for hobby or shop? Your garage will do if you know the three ways to use a one-car garage and still get your car in. Page 120.

10 handsome homebuilts you can fly is a look at the latest, smartest designs for amateur plane-builders. Page 72.



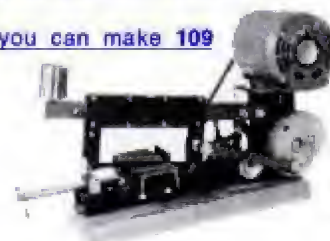
Moving up to a big bike 102



VariEze—a sophisticated homebuilt 74



Cutoff saw you can make 109



Satellites—more fun for radio hams 76

EVERY MONTH

- [6 Homeowner's Clinic](#)
- [12 Letters](#)
- [14 The Bicycle Shop](#)
- [30 All Outdoors](#)

- [42 Science Worldwide](#)
- [50 Car Clinic](#)
- [60 Appliance Clinic](#)

71, 79, 87, 105, 148 It's New Now

SUBSCRIPTION SERVICE: Mail all subscription orders, changes of address with your latest label, to Popular Mechanics, P.O. Box 646, New York, N.Y. 10019. All other correspondence relating to your subscription: James Gable, Customer Service Department, Popular Mechanics, P.O. Box 1567, New York, N.Y. 10019.

POPULAR MECHANICS IS PUBLISHED MONTHLY by the Hearst Corporation, 224 West 57th Street, New York, N.Y. 10019, U.S.A. Single copy for the United States and Canada, 75 cents. Subscription prices: United States and Possessions, \$7.00 for one year; \$13.00 for two years; \$18.00 for three years. Canada, add \$3.00 for each year. All other countries, add \$5.00 for each year. Second-class postage paid at New York, N.Y., and at additional mailing offices. Authorized as second-class mail by the Post Office Department, Ottawa, and for payment of postage in cash. Registered as second-class matter at the Post Office at Mexico D.F., Mexico, June 20, 1950. © 1976 by The Hearst Corporation. All rights reserved. Printed in U.S.A.

POSTMASTER: Please send Forms 3579 to Popular Mechanics, P.O. Box 646, New York, N.Y. 10019.



The new AC-Delco Tune-Up Kit. A matched set to end mix-ups.

There's nothing worse than starting a tune-up on a Saturday morning — only to discover that you've picked up the wrong parts.

To help end Saturday morning foul-ups, power-packed AC Fire-Ring Spark Plugs and Delco-Remy Igni-

tion Parts are now packaged together in new AC-Delco Tune-Up Kits.

AC-Delco's power team of the right AC Fire-Ring Spark Plugs and Delco-Remy Points and Condenser for your car can work together to help improve your car's

performance and make more efficient use of the gasoline you buy.

Get your next Saturday morning tune-up off to a good start. Go with the names you know, AC-Delco.



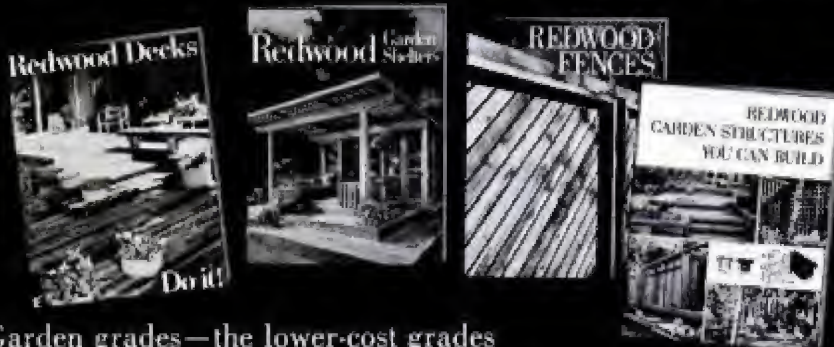
**Go
with the names
you know.**



AC-DELCO DIVISION OF GENERAL MOTORS CORPORATION

Always use proper tune-up procedure.

Redwood.



Garden grades—the lower-cost grades of California's luxury lumber—the practical way to add beauty, value, living space to your home.

Send for 12-page full-color "idea" booklets on garden redwood projects.

CALIFORNIA REDWOOD ASSOCIATION

California Redwood Association
617 Montgomery Street
San Francisco, CA 94111

I enclose \$_____ for the Redwood booklets I have checked.

☐ Garden Structures 35¢
☐ Redwood Decks 35¢
☐ Redwood Fences 35¢
☐ Garden Shelters 35¢
☐ All four for \$1.00

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

New 16-page book on "Window & Door IDEAS" for traditional and contemporary homes.



FREE

guide to different window types, and how each works. Distinctive examples of compatible architectural and window styles. A section on what to consider in window placement. And the full story on Pella Products. How they can eliminate screen and storm chores. How you can reduce maintenance and fuel costs. And a number of other things you might like to look into. It's fully-illustrated, in color, and yours free.

I would like to know more about: ☐ Double-Hung Windows, ☐ Casement Windows, ☐ Awning Windows, ☐ Sliding Glass Doors, ☐ Wood Folding Doors, ☐ I plan to build, ☐ I plan to remodel.

Name _____
Address _____
City _____
State _____ Zip _____
Telephone _____

Mail to: Pella Windows & Doors, Dept. C1186
100 Main St., Pella, Iowa 50219

Popular Mechanics®

JOHN A. LINKLETTER
Editor
SHELDON M. GALLAGER
Executive Editor
DANIEL C. FALES
Managing Editor
WAYNE C. LECKEY
Home and Shop Editor
ALVIN KIETZ
Art Director

BILL HARTFORD
Automotive
JOHN F. PEARSON
Science and Engineering
WM. T. MCKEOWN
Boating, Outdoors and Travel
IVAN BERGER
Electronics and Photography
MICHAEL S. MCCLINTOCK
Associate, Home and Shop
MICHAEL LAMM
West Coast
ROBERT LUND
Detroit Automotive
GARRY WINTER
Copy Chief
RICHARD H. FUNK
Production
SHARI E. GREEN
Assistant, Production
IRA HERRICK
Associate Art Director
DAVID KOMITAU
Assistant Art Director
DON L. MANNES
Assistant Art Director
ED MENTKEN
Assistant Art Director
CLIFFORD B. HICKS
Special Publications
SOPHIE GRONOWICZ
Director, Bureau of Information
EVERETT JOHNSON
Cabinetmaker

DANIEL J. COLEMAN
Director of Advertising

ADVERTISING OFFICES: New York: 224 W. 57th St., (212) 262-4282; Chicago: 520 N. Michigan Ave., (312) 527-2400; Detroit: General Motors Bldg., (313) TRinity 5-8711; Cleveland: 20310 Chagrin Blvd., Shaker Heights, Ohio, (216) 283-7788; Los Angeles: 601 N. Vermont Ave., (213) 666-6263.

JOHN A. REGINA
Advertising Production Manager

Published by The Hearst Corporation

JOHN R. MILLER
President
RANDOLPH A. HEARST
Chairman
RICHARD E. DEEMS
President, Magazines Division
JOSEPH F. KERN
Publisher

POPULAR MECHANICS IS PUBLISHED MONTHLY by the Hearst Corporation, 224 West 57th Street, New York, N.Y. 10019, U.S.A.; John R. Miller, President; Randolph A. Hearst, Chairman; Harrison A. Mitnick, Treasurer; Harvey L. Lipton, Vice President and Secretary, Hearst Magazines Division; Richard E. Deems, President; Gilbert C. Maurer, Executive Vice President, Operations; Raymond J. Peterson, Executive Vice President, Advertising; William S. Campbell, Vice President and General Manager; John F. D'Avolio, Vice President and Resident Controller; Albert A. Rachot, Vice President and Director of Circulation; Joseph F. Kern, Vice President for Popular Mechanics.

ADDRESS ALL EDITORIAL COMMUNICATIONS to 224 West 57th St., New York, N.Y. 10019. For additional sources of information on the articles and products in this issue, write to the Bureau of Information, Popular Mechanics, for free "Where-to-Find-It" List.

A collection of antique Grenadier Guardsman
brass and pewter insignia.



Traditionally smooth. Untraditionally priced.

You can buy a more expensive Canadian, but not a smoother one.

Windsor. A rare breed of Canadian.

HOMEOWNERS' CLINIC

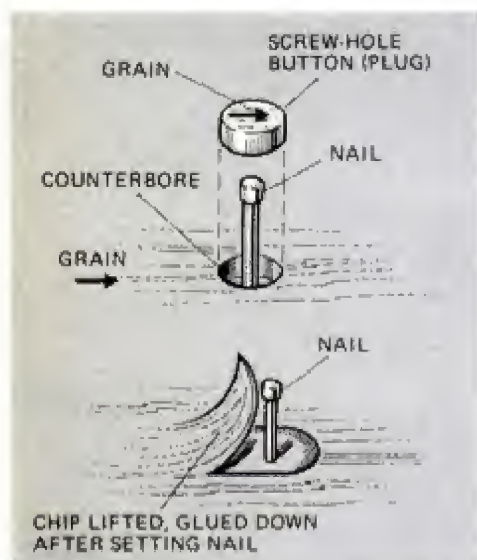


Two tricks for concealing nails

In repairing an old piece I need to conceal several nailheads on a flat surface. I don't want to use putty or filler as it will show after finishing. The piece is an heirloom and I must do the best by it. How do I bring off this trick?—Earl Dalton, Boston, Mass.

Two fairly effective methods are detailed below. In one, you drive a nail in a counterbore, the large diameter of which is $\frac{3}{8}$ in. This prevents splitting of the old stock. Then drive a wood button plug into the large diameter over a drop or two of glue. In placing the plug, make sure the grain of the latter matches and is aligned with that of the surface. Sand the plug flush.

In the second method, used by old-time cabinetmakers, you lift a chip with a gouge, drive the nail, seat it, and then glue the chip back in place. Sand the new surface flush.



Brick paint stains

Shutters and trim on my brick home have sometimes been painted with a chalking paint. Chalking has washed onto brick walls below and appears impossible to remove with paint removers, cleaners or solvents. I've been told sandblasting is the only sure method of removal. Is there any other, less expensive, way?—H. Bronson Smith, Columbia, S.C.

Sandblasting is the only sure method of removing paint stains from brickwork; the cause must be

removed by recoating the woodwork with a gloss outdoor paint. However, hard brushing with an extra strong solution of trisodium phosphate will often bring about a partial removal of the stains, making them less unsightly. Use two handfuls of the chemical to a gallon of water and apply with a stiff-bristle scrubbing brush. Wear rubber gloves and protect your eyes from splatters.

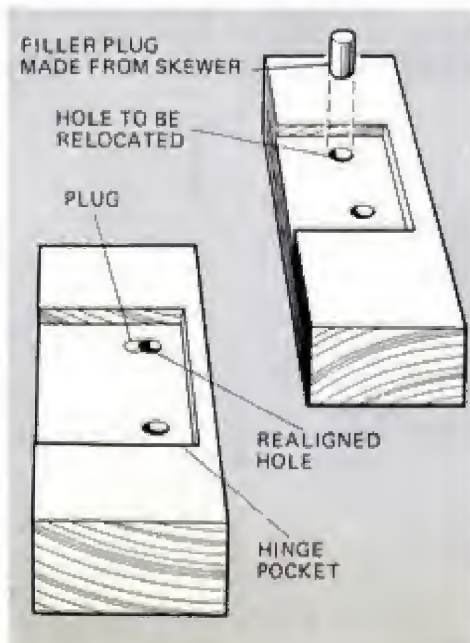
Garage-door weatherstrip

To keep out driven snow and rain I need to install a rubber weatherstrip along the lower edge of a metal garage door. How do I attach the strip to the metal?—Thaddeus S. Kornowski, Sterling Heights, Mich.

I assume the door is of the roll-up type. On all such doors I know of the bottom edge is flat, so that the rubber seal or strip can be attached with screws spaced every 6 or 8 in. along the length. On a metal door you use sheet-metal screws of the self-tapping type, drilling tap-size holes and driving the screws through the rubber seal. As you attach the seal or strip, keep it stretched fairly tight as you go; otherwise it may tend to sag or buckle between the screws.

Shifting tiny screw

I need to shift a tiny screw holding a hinge a little over half the diameter of the hole. How can I do this?—John Little, Sacramento, Calif.



You say "tiny" so I must assume the screw is a No. 1 or 0 size, and that your purpose is to tilt the hinge slightly. It's tricky, but usually can be done successfully as detailed, using a piece cut from a skewer (round toothpick) as a hole filler.

Cut a section of toothpick that will fit tightly in the existing hole, coat it with glue, tap in place in the hole and file the projecting end flush. Wait until the glue dries, then locate the new hole with a punch mark made with an awl and drill to the required depth.

Faucet washers wear out

I have to replace washers in faucets every six months or so. The seats seem in good condition, yet the old washers have rather deep grooves when examined closely. What's wrong?—Frank J. Hall, Bergenfield, N.J.

You may need to resurface the washer seats with a tool made for this purpose. Usually such a reseating tool is available from a local rental service for a nominal charge. Be sure washers are the right size.

Crumbling mortar

I recently bought an older home with fieldstone foundation walls. Mortar in the walls seems to be crumbling at the surface, inside and outside. How can I prevent this?—E.A. Gauthier, Manchester, N.H.

Repointing is the only permanent remedy but you can slow this deterioration for some time by using a clear masonry sealer. Brush off all loose material with a stiff-bristle brush. Then coat the mortared joints with the sealer, following instructions for application. You should understand that this is only a stop-gap procedure that will extend the life of the mortar for a year or more at a reasonable cost in time and cash outlay. ★★★

Do you have a home maintenance or repair problem? Send it to Homeowners Clinic, Popular Mechanics, 224 West 57th St., New York, N.Y. 10019. Letters cannot be answered individually, but problems of wide interest will be discussed in this column. For more home repair and maintenance help, get PM's Home Care Guide, \$4.49 postpaid. Send orders to PM, Dept. HCG, Box 1014, New York, N.Y. 10019.

I like Winston Super King for one reason.

Winston Super King gives me more
of what counts: taste. A lot of extra-long cigarettes
give you more length, but less taste.
Real taste is what smoking's all about. For me,
Winston Super King is for real.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

19 mg. "tar", 1.3 mg. nicotine av.
per cigarette, FTC Report
MAR '75.



**AMERICA NEEDS ONE MILLION MORE
SKILLED MEN BY 1985.**

PHOTOGRAPH BY MICHAEL O'NEILL FOR THE U.S. DEPARTMENT OF LABOR

THE FUTURE BELONGS TO THE FEW OF US STILL WILLING TO GET OUR HANDS DIRTY.

If you like to work with your hands, you've got two advantages over people who work at a desk.

First, you're likely to end the day with a smile on your face rather than a knot in your stomach. Because you can see the results of your work right in front of you. Real. Satisfying. It's good to be able to say, "I built that...I fixed that...I made that happen." And to walk away from the job with no doubts about it or yourself.

Second, when you consider how technologically complex our life has become, with cars, appliances, and factories full of machinery—all in need of maintenance—you realize that America cannot do without her skilled craftsmen, repairmen, and mechanics. And it's satisfying to know you're needed and appreciated.

Why do we tell you this? We're ICS, International Correspondence Schools. And while we can't guarantee you a job—no school can do that—we can give you the first-rate training you need, especially if you're interested in one of the grow-

ing fields where ICS concentrates its training.

As an ICS student, you study at home, on your own schedule. You waste no time traveling to and from class. And you never have to miss a paycheck.

But you're never alone. Skilled instructors are always ready to help you.

If you ever have doubts or problems or just want to talk to an instructor, you can call ICS from anywhere in the continental United States or Canada using our special toll-free Dial-a-Question® service.

Since 1890, millions of men and women around the world have turned to ICS for career training.

More than 70 of America's largest 100 corporations (including Gulf Oil, Bethlehem Steel, Westinghouse and 3M) use ICS training for their own employees.

No one can promise success, but if you want more—more money, more security, more day-to-day satisfaction and more future—our free Career Booklet and free Demonstration Lesson can help you get started in the right direction. Just check the box next to the

field that interests you most and mail the postpaid card today. There's no obligation.

A lot of Americans these days are allergic to dirt under their fingernails.

That means more opportunity for those of us who aren't. Remember, it's your life. You might as well make the most of it.

© 1976 Inter, Inc. G

CHECK BELOW FOR A FREE CAREER BOOKLET & DEMO LESSON.

- | | |
|---|--|
| <input type="checkbox"/> Electrician | <input type="checkbox"/> Civil Engineering |
| <input type="checkbox"/> Engineering | <input type="checkbox"/> Interior Decorating |
| <input type="checkbox"/> Accounting | <input type="checkbox"/> Construction |
| <input type="checkbox"/> Drafting | <input type="checkbox"/> Electrician |
| <input type="checkbox"/> Electronics Technician | <input type="checkbox"/> Appliance Service & Repair |
| <input type="checkbox"/> TV Service & Repair | <input type="checkbox"/> Income Tax |
| <input type="checkbox"/> Surveying & Mapping | <input type="checkbox"/> Motel/Restaurant Management |
| <input type="checkbox"/> Diesel Mechanic | <input type="checkbox"/> Mechanical Engineering |
| <input type="checkbox"/> Air Conditioning & Refrigeration | <input type="checkbox"/> High School |
| <input type="checkbox"/> Automotive Mechanics | |
| <input type="checkbox"/> Business Management | |

Name _____ Age _____

Address _____

City _____

State _____ Zip _____

Phone _____

ICS

XA906N

INTERNATIONAL CORRESPONDENCE SCHOOLS
SCRANTON, PA. 18515

Veterans: Taken for career purposes, ICS Programs qualify for VA Benefits.
Canadian residents use Scranton, Pa. address for orders from ICS Canadian, Ltd.
In Hawaii: 931 University Ave., Honolulu, Hawaii 96813.

Careers	Average annual job openings, 1972-85†	% increase new job openings, 1972-85†
Auto Mechanics	22,300	18.4%
Air Conditioning Refrigeration and Heating Mechanics	13,300	96.3%
TV and Radio Service Technicians	4,400	18.1%
Electricians (Construction and Maintenance)	20,900	30.0%
Engineering and Science Technicians	39,600	48.9%

*Source: U.S. Office of Education publication, "25 technical careers you can learn in 2 years or less."
†Source: 1974 U.S. Dept. of Labor Occupational Manpower and Training Needs

LETTERS

TO THE EDITOR

Let 'em disappear!

The article, *How to Stay Alive on a Motorized Bicycle* (page 56, Dec. '75), had one item commendable for its accuracy. It is the caption on page 58 which mentions "two-stroke" engine. It is usually and wrongly called "two-cycle." Your accuracy is appreciated.

What is not appreciated is editorializing instead of facts, particularly your bias to force bike riders to use helmets! Let those that don't use them get killed young enough to eliminate their genetic strain.

R.W. LONG
MOORE HAVEN, FLA.

Repair tips confuse

Your Fuel-Injection System: How It Works and How to Keep Your Fuel-Injection System Working Smoothly (pages 97 and 100, Nov. '75) offer car owners an opportunity to become familiar with the newer fuel delivery systems. Unfortunately, trying to cover four different types in an all-inclusive article is confusing and has led to some misinterpretations. For example:

1. Pinching the hose on the pressure sensor is not a meaningful test, since it does not cause a vacuum change (air does not flow through the sensor). It is best to remove the hose which vents the sensor to atmospheric pressure (no vacuum).

2. The injector resistance test indicated will not identify a fault since most general-use ohmmeters are not sensitive enough to differentiate between 2.4 ohms (normal) and zero ohms (short).

3. Disconnecting the engine temperature sensor will not always give the result indicated. On most cars, the engine will not run when this sensor is open-circuited. Most importantly, none of these tests identify the most likely cause of failure. Effective diagnosis of an EFI system requires specialized test equipment.

4. A water-filled, or clogged, fuel filter is indeed a major problem but obvious symptoms like high-speed sputtering will be evident long before it affects starting. It goes without saying that heating the fuel filter and open-air-spray testing of injectors is a hazardous procedure at best.

DONALD F. HAZELMAN
JANBO INSTRUMENT CO.
EL MONTE, CAL.

The articles were designed to give weekend mechanics an introduction to fuel injection, not a complete course. All procedures we described are technically sound and recommended by experts (for example, Cadillac's technical service department and VW of America service training department).

A 'colonial charmer'

Here is a picture of a dry sink my son just made for me using your plans (*A Little Colonial Charmer You Can Build for \$45*, page 38, Feb. '72). He built it in his own shop from some used pine boards his uncle supplied. Needless to say, I am very



proud of the cabinet and of my son, who is 14 years old.

MRS. JAMES PARMITER
NORTON HILL, N.Y.

How to count aircraft

Enjoyed your story on the F-16 (*F-16: The Fighter Everybody Wants*, page 72, Nov. '75). However, you were way off base with the statement that if 3000 to 4000 F-16s are built, it would be "possibly the greatest number of any one aircraft type ever manufactured."

Look at some of the World War II production runs and you'll see what I mean: 12,731 Boeing B-17s and 10,123 C-47s were built, plus 803 DC-3s. From 1940 until 1953, 12,751 Vought Corsairs were made.

Even some civilian types have been made in total numbers two to three times your possible F-16 production. Cessna has made more than 15,000 of their 172/Skyhawk model. As far back as 1966, they made and sold

3000 of their Model 150 in a year.

ROBERT W. STALEY
DUBLIN, OHIO

Yes, the statement was misleading. The intent was to imply that even more than 4000 may be built.

Airplane buffs have a field day when it comes to identifying various models in those big runs.

Many warplanes were so modified during extensive production-line changes that the later models bore little resemblance to their predecessors. About 13,000 P-40s were built, for instance, but the P-40E was in many ways a new plane compared to the original P-40.

Fantastic ceramics

Richard Dempewolff's article on ceramics (*Ceramics: Fantastic New Materials That Will Change Your Life*, page 52, Dec. '75) is indeed very exciting.

The great possibilities in the ceramic field point out a new and exciting field for young people. The article also made a tremendous contribution to those of us over 40. Millions of Americans earn their living either directly or indirectly from products and services that are dependent on those very metals that are so swiftly disappearing.

You've given us time to rethink our situation—to plan ahead and to find out about the unlimited possibilities of ceramics. Many thanks.

W. FRANK DUNN
DALLAS, TEX.

Doesn't make sense

I usually find your articles informative and useful, but *How To Stretch Your Gasoline Dollar: Retune for Regular* (page 64, Dec. '75) is an exception.

Assuming a motorist buys 1000 gallons of premium gas per year at an average of 6 cents per gallon more than regular, it does not take a C.P.A. to figure that at \$60 per year, it would take two to three years to recover the investment. Even to do it yourself and expend a day at hard labor—plus parts—in order to save \$1.15 weekly hardly makes sense to me. Also, how about the likely loss in performance and reliability that can result from this needless tampering?

KENNETH F. CAHN
LONG BEACH, N.Y.

Here it is from Firestone...



Big Rig Toughness on Little Truck Tires!

You probably think you've looked everywhere for ways to lower your costs and pick up your profits. But if you're running a panel or a pickup or a van and you haven't thought about tires, think about this:

Firestone makes their Transport* truck tire in sizes to fit smaller trucks, even vans and pickups. Which means you'll have rugged nylon cord body, long mileage tread rubber, and the same tread design we put on the big rigs.

How much do they cost? Even though you would probably expect to pay much more for these tires, in many sizes you pay *no more than for a passenger tire!*

You don't use handyman's tools as a professional — so don't use handyman's tires. Get the Firestone Transport at your Firestone Dealer or Store. A tough tire for tough times.



Firestone
TRANSPORT

A lot of tire for little trucks.



EDUCATION MEANS INVOLVEMENT

... whether it's co-sponsoring a reduced emissions rallye, conducting a hang glider or industry seminar, developing a man-powered aircraft, working with an electric-powered vehicle or conducting a Directed Research Project, Northrop University students are involved!

Students bring their ideas to the Inglewood campus from most every state and some 50 foreign nations.

If you want to get involved, start by completing and mailing the coupon below. There's no obligation, of course.

NORTHROP UNIVERSITY

1122 W. Arbor Vitae Street
Inglewood, California 90306

An independent, accredited, co-educational senior institution offering undergraduate and graduate programs in engineering, science, math, computer science, technology and management.

Northrop University
1122 W. Arbor Vitae St., Inglewood, CA 90306

Please send me more information, I am interested in:

- ☐ Undergraduate ☐ Graduate
☐ Colleges of: Engineering, Technology, Science & Humanities
☐ College of Business & Management
☐ Institute of Technology (A & P)
☐ School of Law (Graduate)

H.S. Grad. Date _____ 19 _____

Name _____ Age _____

Address _____

City _____

State _____ Zip _____

REPAINTING A BICYCLE BY EUGENE A. SLOANE

THE BICYCLE SHOP



When, not if, your bike frame becomes so scratched it needs touchup or complete repainting, you can bring it back to showroom condition with the easy steps following.

Some bike makers, such as Schwinn and Raleigh, provide spray cans of matching paint. They're okay for touchup, but even for these simple jobs I prefer a spray gun that gives a finer, glossier coating. Paint spray cans give a coarse spray that makes a professional painting job almost impossible. It takes three or four spray cans (at \$2.50 or more



Feather sand any damaged spots before you apply primer and final coat of paint.

per can) to do a complete bike, not counting undercoatings and primers. As for decals, you may wrangle them out of the more-popular-make bike dealers, but don't count on it. I remove them with the old paint.

Here are the materials you will need for touching up spots or complete frame refinish:

Paint: I recommend an acrylic enamel, such as Martin-Senour, which combines fast drying and durability of acrylic lacquer with high gloss, flow and ease of handling enamel. See instructions on the paint can for correct reducer for various temperatures. Acid-etch bare steel first with Martin-Senour No. 6879 twin etch for good adhesion. Both paint and primer must be reduced (thinned) per can instructions for spraying.

Spray gun: I like a Binks "Wren" air gun (with compressor about \$75.) that can be adjusted to a spray pattern small enough to pencil

stripe. It stops messy overspray, hazards of fumes in air, saves paint. This "gun" has many after uses.

Sandpaper: Use coarse sandpaper for spot removal down to bare metal. Use silicon carbide grade 400 fine sandpaper to wet-sand primer coats and dry-sand the next-to-last coat of finish paint.

Paint remover: To remove all paint from the frame, I recommend sandblasting. If you have an air compressor, you can buy a simple sandblast gun such as the W.R. Brown Co. gun which looks like a spray gun except for the hard steel nozzle. Use dry white silica sand (about \$2 per 100-lb. sack), an old bike box to collect and reuse sand, a simple filter to breathe through and face mask to shield eyes. Or send frame to a professional sandblast shop (about \$15). Or use chemical paint remover such as Martin-Senour No. 6801 Paint Blitz.

For general instructions, I urge you to buy the excellent Martin-Senour 68-page book *A Guide To Better Automotive Refinishing*, for \$2 from an auto parts store.

For spot repair

1. With rough sandpaper, remove scratched area down to bare metal. With finer sandpaper, feather-edge.

2. Mask areas where paint is not wanted, such as over stripes.

3. Spray primer and finish paints. Spray two coats of primer, allowing a half minute or so between coats. After six hours, sand primer with fine sandpaper, then spray finish coats, letting each get dry to touch before next coat (about 30 seconds). Hold air gun at right angle, move four to six inches above surface. Turn off gun after each stroke to avoid runny paint buildup. If paint runs, spray over lightly to flow out. Be sure not to spray in an arc; *gun must always parallel the work surface*. Practice on old pipe.

4. With fine sandpaper, lightly sand next-to-final finish coat, after six hours' drying time. Spray final coat, but don't sand it. Don't polish it for at least 90 days.

For complete frame finish

1. Remove wheels, fork, cranks,

(Please turn to page 16)

ACRYLIC

**lets you caulk
with confidence.**

If your bathroom experience with caulk has been something short of successful, perhaps you've been using the wrong type of product.

What you want is a caulk that is easy to work with and clean up. One that not only sticks to ceramic surfaces but stays in the joint without cracking and yellowing on prolonged exposure to moisture.

What you need is a *quality acrylic latex* caulk. An acrylic is water based, so you can apply it to damp surfaces, tool it with a wet finger, and wipe away the excess with plain or soapy water. It flows easily and there is no unpleasant solvent smell. Once around the tub with a good acrylic is

probably all you'll ever need to caulk—at least until you decide to redecorate.

Ask your hardware retailer which of his lines include acrylic polymers. (Some are available in handy squeeze-tubes for easier application in tight spaces.) Then buy the top of the line. Because acrylic latex is a true general-purpose caulk, you can always use what's left over to seal other joints around the house.

For more tips
on how and where to
use acrylic latex caulks,
return the coupon today.

ROHM HAAS 
ROHM & HAAS CO. 1990

Where
quality
acrylics
come
from



Mooney
M AND HAAS COMPANY
Independence Mall West
Philadelphia, PA 19105

Please
rush your
caulk
brochure.



And our **FREE 164 PAGE CATALOG** is packed with exciting and unusual values in hobby, electronic and science items — plus 4,500 finds for fun, study or profit... for every member of the family.

4 1/8" ASTRONOMICAL TELESCOPE

New moon orders, filled by Saturday, double star, new equatorial mount, 4 1/2" f.l. wave mirror (HYPER), delay, horizontal limit or position. Black & white photo. Mounting tube, .015" fiber, 1" P.L., 1.5X Kellor refractive optics and Barlow lens to double & triple covered up to 135X. Free Solar Chart plus 2 Books.

Block No. AS, 105H

(Shipping Wt. 42 lbs.) \$169.50 FOR
4 1/2" WITH CLOCK DRIVE \$85.10TH \$105.50 FOR
6" REFLECTOR TELESCOPE (JAX to 300X) \$85.187H \$240.50 FOR
8" WITH CLOCK DRIVE \$85.06GH \$245.00 FOR
3" DELUXE REFLECTOR (30 to 90X) \$80.183H & \$95.95 Pod.
STANDARD 3" REFLECTOR \$84.24M & \$99.95 Pod.

[illegible]

157 mil. out in space, the
Astronauts used this scope
20X40 binocular mounted
to view Earth's air biggest,
most powerful fire distance,
Earth's cities come in big
round & sharp to the size
through the human objective
lenses; 17.5 ft. field of view
at 1000 yds. relative horizon
area, 3.0 ft. Fully coated opti-
cally; 20X apert. design eye
lenses. Coated Hi-T Power
prisms. Extra lens. All Ameri-
can built with fold-down rubber eyecups, including
carrying case.

No. 1554	0443450	47.50	599.95	Pd.
No. 1558	0443450	19.95	27.95	Pd.

Small but mighty! 8-digit, 4-function electronic calculator does everything his owner does—even has automatic π key for handy 3.14159. Take it anywhere. Fits in your pocket—3½ size of cigarette pack. Constant π dynamic features. Floating decimal. Constant π and π^2 keys. Auto on/off. Pushes into 100% rechargeable Ni-Cd battery pack, 2 x 3½ x 9/16" with plenty of room for most fingers. Another small but mighty advanced technology.

Stock No. 17434M **\$19.95**

Completely new Catalog: Packed with huge selection of telescopes, microscopes, binoculars, cameras, magnifiers, prisms, photo combinations, scopes and viewing lighting items, parts, kits, accessories — many hard-to-find special bargains. 100% of profits. Illustrations. Free information. Also computerized. Schools, libraries.

EDMUND SCIENTIFIC CO.
368 Eastern Building, Harrington, N. J. 08033
Please rush free Giant Catalog "H"

Name _____
Address _____
City _____ State _____ Zip _____

WHEN YOU COME TO PHILADELPHIA BE SURE TO SEE
FREE BICENTENNIAL LIGHT SHOW
IN BARRINGTON, N.J. ONLY 10 MINUTES AWAY AT
EDMUND FACTORY STORE



new font, article, book, "Popular Mechanics"
"The Automated ESP Machine"
Which light stays on when you push the bottom
Triangle, Arrow, Dots or Heart? If you've got ESP,
you can tell your subject will guess right, righteously.
And that's the beauty of the ESP Machine. It's the
only for amateurs—you can't beat the machine by
understanding its basic ESP, precognition, psych-
ic, telepathy experiments. Portable, 8 1/2" x 4 1/2"
letter.

No. 72.0000. (64"x33"x2") \$29.95 Pnd
EXTRA PADS TO RECORD 250 EXPERIMENTS

[illegible]

4th treasure hunting on the north: Fascinating fun & sometimes profitable! The 4th line in this 7 lb. Magnet is also it! We'll be Magnet-ing it wherever in any river, lake or ocean. Troll in along bottom and "treasure" will be unloading itself, unloading other material valuables. 4 lb. Magnet is our simple - Allen's A Type - Giant, just under our price. Little over 100 lbs on land, much greater weight in water.

Stock No. 72-103H \$17.50. Pnd.
Giant ELECTROMAGNET LIFTS 50 lbs. on
Stock No. 71-224H \$17.50. Pnd.



Parabolic mike w. 18-7, 1" dynamic pickup reflecting about 2 1/2 ft. in diameter. Excellent signals. 100 ft. of shielded twisted pairs, each shielded cover before board. Highest signal to noise ratio possible. Earphones, 4000 ohm-terminated, shielded socket. Reg. 100 by 100, 1000, 1000, 1000.

No. 1549H (519) L.B. \$299.00 Ppd.
LOW COST MODEL NO EARPHONES. ELECT. CHRG.

No. 1549H \$149.95 Ppd.
LOWER SENSITIVITY ECON. MOD. W/O ELECT. CHRG.

No. 80-242H \$89.50 Ppd.



17' DECK
12' FEET

COMPLETE AND MAIL WITH CHECK, M.O. OR CHARGE NO.

EDMUND SCIENTIFIC COMPANY
300 Edcorp Building, Basking Ridge, N.J. 08807

Name	Quantity	Description	Price Each	Total

SUBTOTAL _____
Shipping Charge \$1.00
TOTAL DUE \$_____

I enclose ☐ check ☐ money order for TOTAL \$_____

Charge my BankAmericard® ☒
Charge my MasterCard® ☐

Telephone No. _____

We Card No. is _____ Signature _____

Cash Expiration Date _____ NAME _____

30-DAY MONEY-BACK GUARANTEE: Any must be satisfied or return any purchase in 30 days for full refund.
- \$15.00 maximum

CITY _____ STATE _____ ZIP _____

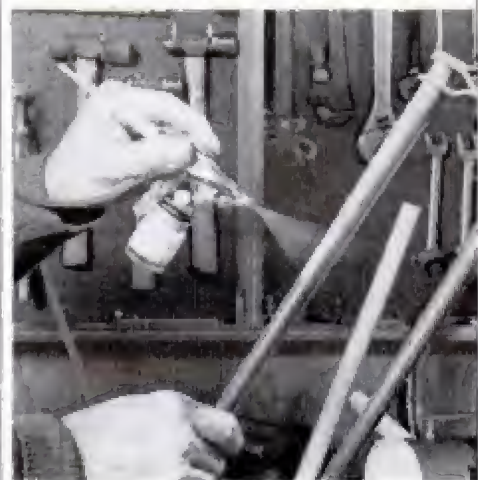
(Continued from page 14)

derailleurs, chain, bottom bracket handlebars, stem, seat and seat post. Mask threads on bottom bracket, derailleur "ear," fork top. Remove fixed cones on bottom bracket, headset and fork.

2. Mask all chromed areas. (You can redo pin striping with masking tape and Wren air gun later.)

3. If paint is not badly scratched or weathered, rough sanding is only preparation needed. If finish is badly scratched and marred, remove down to bare metal with sandblasting or chemical paint remover.

4. Immediately after sandblast or chemical paint removal, apply acid



This mini air gun is just right for refinishing bicycles or other small items.

etch such as Martin-Senour 'Twint
Etch to avoid rust and provide good
"bite" for new paint adhesion.

5. Apply primer and finish coats as in steps three and four in spot finishing above.

Stir primer and finish paints well. Use same type primer as finish. Use only reducers recommended for primer and finish and select reducer according to temperature (see instructions on can). Always spray in well vented area, *never* near flame such as a furnace or water heater.

I prefer the back yard on an over 60°-F. day in calm air. Hang bike parts from line or overhead pipe. Clean spray-can nozzle of accumulated dry paint every five minutes or so. If indoors, use face mask filter to avoid breathing paint mist. If you use chemical paint remover, be sure to wash off all traces of remover with soapy hot water; rinse and dry thoroughly. If frame was sandblasted, blow out all loose sand from frame before priming. Two coats of prime and three or four of finish should do. ★★★

New Free Book Discusses How to Go About Selling Your Invention

FREE BOOKLET . . . "How to Go About Selling Your Invention."
Outlines each step of how to submit your invention to
manufacturers. Just mail coupon. No obligation whatever.

If you have an invention that you are planning on offering to manufacturers on an outright sale or royalty basis, the booklet we offer free may prove very valuable in saving you both time and money, whether you present your invention yourself or employ us to help you.

We are specialists in assisting inventors prepare the descriptive materials for submitting to manufacturers. We are in contact continuously with scores of manufacturers, from coast to coast. We are well informed which manufacturers may be interested in your particular kind of invention. Hundreds of manufacturers have written us descriptions of the types of inventions they want.

Our service is designed to do all the many things the average inventor does not have the time and facilities for doing, or who lacks knowledge of the proper markets. When you employ us to assist you, we prepare descriptive material that points up your invention, its advantages, its construction, its market potential and potential profit possibilities.

For preparing the descriptive materials for your invention we charge a fee. Then, if a manufacturer expresses serious interest in your invention, you may, if you so desire, employ us on a commission basis to assist you and/or your attorney in negotiating. If a deal is successfully concluded, we will refund the fee. We are a nationally known concern with an impeccable reputation for ethics and integrity. We have been assisting inventors for over 20 years and we believe we

have the finest service offered to inventors.

We are not patent attorneys, and if your invention is unpatented we encourage all inventors to consult one as to rights, searches, patentability, etc. If you do not know a patent attorney, write us and we will tell you how to obtain the names of all U.S. Patent Attorneys in your area and you can make your own choice.

To assist inventors we have prepared a booklet entitled "How to Go About Selling Your Invention." This booklet contains such information as current royalty rates being paid by manufacturers, discusses various types of inventions and the markets for them, and tells the most effective methods you can use in presenting your invention, whether you employ us or do it yourself.

You can obtain a copy of this booklet merely by mailing the coupon below. It will be sent to you with our compliments, free, without any obligation whatever. If you wish to write us for comments about your invention, please do so. We make no charge for consultation. But please do NOT send blueprints or models.

REFERENCES: Your own bank, attorney, or Chamber of Commerce.

K. O. Kessler, President
KESSLER SALES CORPORATION
DEPT. D-52, FREMONT, OHIO 43420

Accredited as a Corporation
Under the Laws of Ohio

-----MAIL THIS COUPON FOR FREE BOOKLET-----

Mr. K. O. Kessler, President

Kessler Sales Corporation, Dept. D-52, Fremont, Ohio 43420

Please mail me a copy of your FREE Booklet, "How to Go About Selling Your Invention," which reveals many helpful points about offering my invention for sale and explains your service. It is understood that there is no charge for this booklet now or at any other time and I am not obligated in any way.

MY NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

IMPORTS AND MOTORSPORTS



Another happy hatchback

You won't see this one until next month when it should be in the bull's-eye position in showrooms at Chrysler/Plymouth dealers nationwide. The Plymouth Arrow is certainly right on the mark in the styling department, also impressive in its mechanicals. Like the Dodge Colt, Chrysler Corp.'s other captive import (Colt and Arrow are made in Japan by Mitsubishi), the Arrow uses the 2000-cc overhead-cam engine with the just-introduced Silent Shaft feature. This twin-shaft arrangement reduces engine vibration.

The Arrow, slightly smaller and lighter than the Colt, will be available in three states of trim: the base model (above), and GS and GT versions. The GS trim includes more carpeting, comfort and convenience items; the GT adds some real equipment over that: five-speed transmission, radial tires, full instrumentation and more.

Basic dimensions and weight of the Arrow are:

Wheelbase	92.1 in.
Overall length	167.3 in.
Overall width	63.4 in.
Overall height	52.5 in.
Curb weight	2200 lbs.

We estimate that the base price will be about \$3000.

Amazing race

I don't know how they do it, but Subaru's four-wheel-drive station wagon at \$4149 has got to be the automotive equivalent of a good five-cent cigar. I drove all of the '76 Subarus at Sears Point International Raceway recently, but spent most of my time in the 4wd wagon on the off-road course in the hills above the

road circuit. It was great sport just getting up and out of places where two-wheel drives would fear to tread; it was even better trying to do it as fast as possible. I wondered why I didn't wind up with a headache the way my helmet was bouncing against the headliner, but I wondered more



how nothing on the wagon bottomed or broke.

All seven Subaru '76 models use the SEEC-T engine (for Subaru Exhaust Emission Control Technique) which does the cleanup job without need for add-on air pumps, metering systems or catalytic converters. The lean-burn design has a special air-intake valve to move extra air into the cylinders. The 1400-cc flat Fours give the Subarus an EPA of 39 mpg highway and 29 mpg city. The base two-door sedan is \$2899 with radial tires, power-assisted front disc brakes and reclining buckets. All are front-wheel drive, except that 4wd wagon, terror of terra firma and the not so firma.

Camping in

You won't notice the changes in VW's Campmobile unless you're invited over for a drink. The new swivel passenger seat and the floor plan make the mini-motorhome much more livable: The plumbing, sink, refrigerator and stove have been incorporated in one console on the left side of the vehicle to provide more floor space.



Under the hood—the rear floor—that is—there's a bigger air-cooled Four: up to 2 liters from 1.8. The price now starts at \$6600, but it zooms up to \$8000 when completely equipped.

Motorize your Motobecane

Here's a development that's guaranteed to shock serious cyclists right off their saddles. But horsepower instead of legpower isn't taboo to everyone. This 11-pound, 0.8-hp gasoline engine fits on the front fork of a 10-speed or any other bicycle and turns the front wheel through a driving roller. It's double-muffled and lets you cruise at 16 mph at 0 rpm of the pedals. \$170. TAS Industries Inc., 12728 N.E. 15th Place, Bellevue, Wash. 98005. ★★★





**People ask me
if I really enjoy
smoking.**

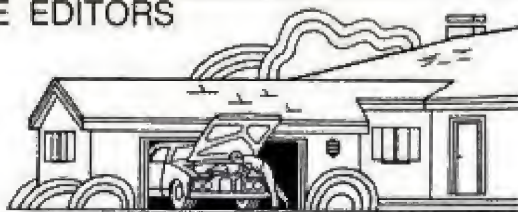
I sure do. And Salem Longs are why. They give me all the good cigarette taste I'm smoking for. Plus Salem's fresh menthol. And they're longer, too.

That's why I enjoy smoking. That's why I smoke Salem Longs.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

19 mg. "tar", 1.3 mg. nicotine av. per cigarette. FTC Report MAR. '75.

THE PM GARAGE



Two home sparkplug cleaners

Most home mechanics toss out their used sparkplugs, not realizing that cleaning can double or triple plug life. For years I've had mine sand-blasted at a local service station



Jaycraft Turbo-Blast

(15 cents apiece), and I usually get 40,000 miles from a set.

So when I began seeing ads for plug blasters to be used at home, I ordered two of them—a \$9.95 unit from Elco and the \$19.95 Jaycraft Turbo-Blast.

The Elco uses 12-volt current from a car battery and, in my opinion, does a totally inadequate cleaning job. I



Elco

rate it "not acceptable" for that reason alone. I noticed, too, that grit from the blaster can enter the electric motor, so I suspect it won't last long. And why should you have to run down your car's battery when you always do tune-ups near house current?

The Jaycraft Turbo-Blast does much better, but it's still not up to the standards of filling-station blasters. You must loosen hardened carbon with a scraper and wire brush (both provided) before blasting.

These plug blasters work on the same principle: a blower shoots sand or silicon beads toward the plug tip.

Elco has no real system to recirculate sand, so you have to turn it over and over in your hand to get the sand back in its hopper. Jaycraft recirculates the beads automatically.

If you're maintaining a fleet, consider the Jaycraft. Here are addresses: Elco International Ltd., Box 280, River Forest, Ill. 60305; and Jaycraft Corp., 760 North Marshall Ave., El Cajon, Calif. 92020.—*M.L.*

Audio tune-up guides

These Audel tune-up tapes are a delight to use, especially after you've struggled through straight printed instructions. Not that Audel asks you not to read—the tapes are in addition to printed instructions. But once



you've gone through the recording along with the Audel booklet, chances are you'll be able to do the tune-up and maintenance with just the tape, referring occasionally to pictures in the Audel booklet.

Audel Mini-Guides include audio cassette instructions plus an illustrated booklet. Mini-Guides are presently available for most Volkswagens, Ford products, GM cars, Chrysler Corp. models, Toyotas and Datsuns—all as far back as 1964.

The instructions assume you have never done a tune-up. You go step by step through cleaning, disassembly and reassembly. The only thing I recommend that they don't suggest is that you get a foot-pedal on/off switch.

This is a tune-up guide that really lets you do it yourself—no kidding. At \$7.95 per, it's a good deal, because you can save that amount many times over in shop labor charges.

Most auto stores carry Audel's

Can-Do Tune-up Mini-Guide book/cassette combinations, or you can order them from Howard W. Sams & Co., Dept. PM, 4300 West 62nd St., Indianapolis, Ind. 46206.—*M.L.*

Liquid patch for a car seat



When a rip developed in the driver's seat of my aging Dodge, I figured I'd either have to put on expensive new vinyl or cover the tear with not-quite-matching tape. Thus, I was happy to try a new product that promised to do the job inexpensively and leave the seat looking near-new.

It's Vinyl Liquid Patch (VLP), a fast-drying clear product that can be applied directly from its tube.

Following instructions, I drew the torn edges together and placed strips of tape across the tear at about 1-in. intervals. I applied VLP to the exposed edges and let it dry 30 minutes.



Then the tape was removed and the remaining portions treated similarly. Finally, a wide band of liquid went over the entire repair.

After four months, the patch is holding up very well. It's still slightly glossier than the seat (despite my attempts to sand it, as instructed) but it looks far better than before.

A one-ounce tube (which covers a 1 to 2-foot rip) is \$1.98 ppd.; Plasti-Dip International, 1430 West County Rd. C, St. Paul, Minn. 55113.—*J.A.L.*



CHRYSLER
CORPORATION



PLYMOUTH VOYAGER

NO OTHER WAGON WORKS HARDER ON A GALLON OF GAS.

As a wagon buyer, you're a special breed with special needs. Try Voyager on for size. It comes with two different wheelbases, plus an extended body version that seats 15 people. Which is three more than any other wagon. Obviously, the more people room, the more cargo room.

**26 HIGHWAY MPG,
18 CITY MPG.**

That's according to the latest estimated EPA test results on Voyager's Slant 6 with manual transmission. If you don't think those are incredible figures, just compare them with those of any other wagon built anywhere in the world. Your

actual mileage may differ depending on how and where you drive, the condition of your wagon and its optional equipment.

**A TURNING DIAMETER
3-FEET SHORTER?**

That's right. 3 feet shorter



than Ford or Chevrolet. Which means tight U-turns and easier parking. Especially with optional power steering. Plus standard power front disc brakes and independent front suspension.

HERE'S "THE CLINCHER"

For the first 12 months of use, any Chrysler Corporation dealer will fix, without charge for parts or labor, any part of our 1976 passenger cars we supply (except tires) which proves defective in normal use, regardless of mileage. The owner is responsible only for normal maintenance like changing filters and wiper blades.



In California, see your dealer for mileage data for California equipped vehicles.



The fresher your plugs

The more you think about it, the more it makes sense.

The more efficiently you "burn" your gasoline, the better your mileage. And the part that starts that "burn" is a spark plug.

So if your plugs are worn, fouled, coated or damaged you won't get that efficient burn.

Result. Wasted gas. Poor performance. Money lost.

How much better mileage will you get with fresh plugs?



We've been running extensive mileage tests on everyday cars like yours.

And so far nearly 3 out of 4 of the cars tested got better mileage when we

replaced the existing plugs with fresh Champions.

Just how often should you change plugs?

Here's a good, firm answer: It depends.

It depends on where you drive. Stop-and-go city driving will age plugs faster than highway driving.

It depends on your engine. An engine in good overall shape will be easier on its plugs than an engine that has some chronic problems.

It depends on your gasoline. For instance, many people must use unleaded gas in their '75-'76 cars. And many others use it hoping to get longer life out of their plugs and exhaust systems. But if your engine knocks slightly with unleaded gas, you're not doing your plugs any favors. So check your timing. And keep an eye on your plugs

for preignition damage.

We have, however, found that a plug loses efficiency after about 10,000-12,000 miles. So if you time your plugs with your odometer, you should be OK.



WORN OUT.
12,000 miles have taken their toll. Replace.



GLAZED.
Replace with a "colder" heat range.



OILY.
A sure sign of mechanical trouble. Replace plugs. Check rings.



the better your mileage.

The one-plug check.

There's an easy way to check your plugs. Pull just one. What happens to one generally happens to all.

Then trust your eyes. If a plug looks worn, it is worn (like the plug shown on the left with 12,000 miles on it). Check for pitted electrodes, or a burned insulator. If these conditions exist, replace the entire set.

The one-plug check can also warn you of other things. If it's oily, you may be a candidate for a ring job (sorry about that). And if it's fouled, better check your ignition system.

Are fresh plugs a replacement for a tune-up?

Absolutely not. Your condenser, points, etc., all age at their own rate. So eventually a whole tune-up will be necessary. And beneficial.

But when it comes to mileage, spark plugs are critical. And your plugs can be ready for replacement far before you need a whole tune-up.

Why should you fill 'er up with Champions rather than some other plug?

First, we've got your plug. Champion makes the right spark plug for nearly every engine made in the world. So when you need plugs, all you have to look for is the Champion sign. When you find our sign, you've found your plug.

Second, we've got proven performance. Champion plugs have powered more winning cars,

boats, planes, snowmobiles and motorcycles in the past years than any other plugs made.

And third, we've got new packs. With our convenient 4, 6 and 8 packs, you don't have a lot of loose plugs to contend with.

So remember. Fresh plugs mean better mileage. And when it comes time for you to buy your next set of plugs, remember the folks who are trying to help you save money with handy messages like these.



**Fill 'er up
with Champions.**



Toledo, OH 43661

Champion International Corporation, Toledo, OH

DETROIT LISTENING POST



40 mpg-plus for Ford mini

If Henry Ford II has his way, which he usually does, the Ford mini coming from Germany in 1977 will beat Chevrolet's Chevette on miles per gallon. That means something over 40 to the gallon. Ford's chairman has set 40-plus as a minimum—emphasis minimum—goal for his engineers and he would like to top the target by enough of a margin to give Chevy cause for concern.

Unlike some of his subordinates, Ford's head man does not bad-mouth the Chevette. He thinks it's a pretty fair car and doesn't mind saying so.

Denoising the diesel

Bob Stempel, director of engineering for Chevrolet, says it's going to be a while before you will be able to buy a GM car with a diesel engine. The GM diesel is an Oldsmobile product, so what does a Chevrolet guy know about it? Stempel spent 14 years at Olds before moving to Chevy. He says the diesel has a lot of good things going for it, but it's going to take a few years to put a diesel-powered car on the streets because of the noise problem.

"There's a very major acoustical problem with the diesel," Stempel declares, "and you need something like a double engine compartment along with sound deadeners to quiet it down."

The sound problem isn't a problem if you're talking a price of \$15,000 to \$20,000. You isolate the engine and pack plenty of sound-absorbing material around it. But the higher the price of the car, the fewer you sell. Stempel didn't say so, but GM would like to keep the price around or under \$12,000. So the trick is to denoise the diesel in a way that won't kill the car by overpricing it.

Chrysler lean burn stalled?

What's with Chrysler's lean-burn engine? Is it off, on or in limbo? Chrysler has been backpedaling on the LB since it announced the engine last summer.

■ **Item:** The company said it would use the LB with two engines, the 400 and 440-cu.-in. V8s. Chrysler now says it will be used only with the 400.

■ **Item:** The firm said it would install the LB in 200,000 '76 models. That projection has now been whittled down to 30,000 or 40,000 cars.

■ **Item:** Chrysler said if the government would freeze the standards on controlling pollution, it would go lean burn on all cars beginning with the '77 models. But with the late start in getting the LB on the '76 cars, there's no chance of going LB on 100 percent of the '77 cars regardless of what happens on emission standards. Finally, there's the matter of getting dealers to purchase the special shop equipment that's required to diagnose the electronics on the engine to service it. Dealers say they are willing to invest in the equipment. But they want some assurance Chrysler is going to build enough LB cars to make the investment pay off.

While the Chrysler LB is lagging, the idea is still very much alive. And not just at Chrysler. I don't know about American Motors, but insiders at GM and Ford confirm reports that those companies are pushing lean-burn programs to catch up with Chrysler.

Vega engine to outlast car

The aluminum engine used in Chevrolet's Vega will survive even if the car doesn't. That's a twister of a story. At one time, as Chevy now admits, the company had so much trouble with the engine there was talk of dumping it. Or at least pulling it out and replacing it with a conventional cast-iron job until the problems could be solved.

It took almost five years to get the bugs out, but it is now one of the most efficient, problem-free engines in the GM catalog. It is the only GM engine carrying a 60,000-mile guarantee.

Chevrolet is now looking toward increasing the aluminum content by going to an aluminum head. If Vega gets clobbered into retirement by its new small brother, Chevette, the engine will be used in other Chevrolet cars, other GM makes.

Aluminum: faults and virtues

Speaking of aluminum, there's a lot of talk about the light metal finally

coming into its own in automaking as a result of the effort to get the weight out of cars to improve their mileage.

The guys I talk with have mixed feelings about aluminum. They say it's great for saving weight if it's used in sheet form—for body panels and major sections. But they don't like aluminum versus heavier, harder metals on parts where tolerances are critical. Aluminum can be machined for close tolerances, but it is more difficult to work with and production and fabricating costs are higher.

So you will see more aluminum being used for hoods and decks. But except for the Vega head, you won't see very much aluminum used for precision, working parts. Maybe in the future, but not in the next three or four years.

GM's last-forever battery

There's been talk around Detroit for years of life-of-the-car components—parts that will last as long as the car. The auto companies have done a good job of extending the life of many items. Parts last longer than they used to and require less frequent service. But they haven't reached life-of-the-car status.

The AC-Delco Div. of GM has developed a battery that would be life-of-the-car, but unfortunately it isn't available for automobiles. Not yet, anyway. It's called the Delco 1200 and it's a special heavy-duty job for trucks. The battery came out a year ago and AC has been keeping tabs on 300 batteries it sold to truck operators. Most of the trucks have run up 250,000 to 300,000 miles without a battery failure and one rig rolled up more than 350,000 miles with the battery still going strong. That's more battery than most cars need because cars are usually junked at 125,000 to 150,000 miles.

AC already has a maintenance-free battery for cars. This battery never needs water, checking, cleaning or service. But it's not a 300,000-mile battery. If they could just combine the longevity of the truck battery with the no-maintenance features of the car battery, that would be a real last-forever item. ★★★

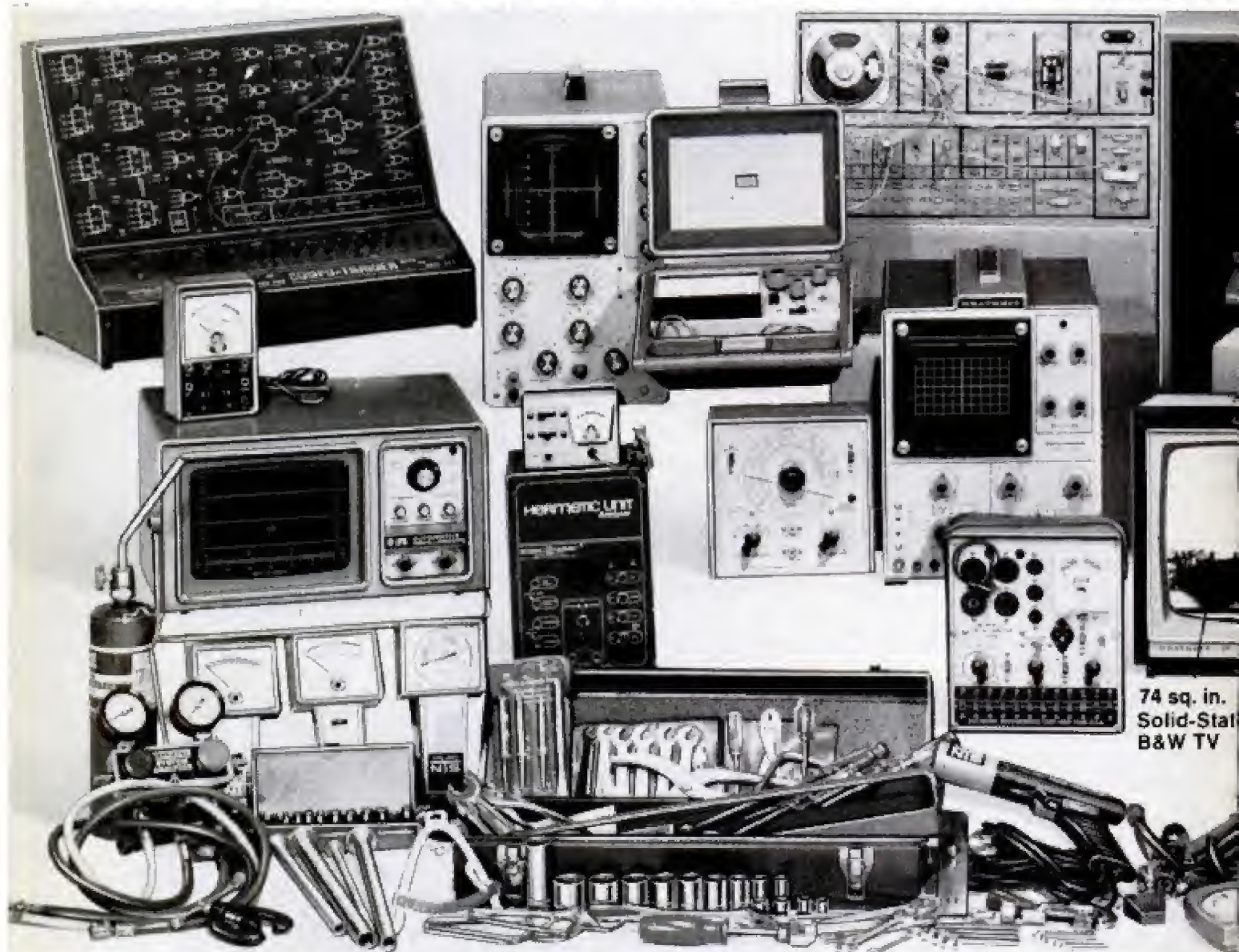
Taste the good times with
RALEIGH.
Rich satisfying tobacco taste
in a golden Kentucky blend.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

Strike! You'll like the feel of
the "Tornado" bowling ball by
Ebonite. It's yours for B&W
coupons, the valuable extra
on every pack of Raleigh. To
see over 1000 gifts, write for
free Gift Catalog: Box 12,
Louisville, KY 40201.

The better the training the better you'll

Send for one of these **FREE** Illustrated



74 sq. in.
Solid-State
B&W TV

Build and keep some of the finest technical equipment made when you train with an NTS Project-Method home study course. And it's usually the same type of equipment you'll meet in the field and use on the job. It will help you acquire first-hand experience and skill — help prepare you better for a variety of exciting technical careers:

ELECTRONICS DIVISION: Courses include professional equipment like 5" solid-state oscilloscope, transistor and tube-tester, vector monitor scope, 74 sq. in. B&W TV, and solid-state stereo AM-FM multiplex receiver, speakers. Color TV courses feature advanced NTS/HEATH DIGITAL GR-2000 Color TV with silent varactor diode tuning; digital read-out channel selection (with optional digital clock), big 315 sq. in. screen.

MECHANICS DIVISION: Learn engine diagnostics, motor overhaul, transmissions, automotive maintenance. Courses include 9 in. solid-state automotive oscilloscope, testers, tools, mechanic's steel tool box, & more.

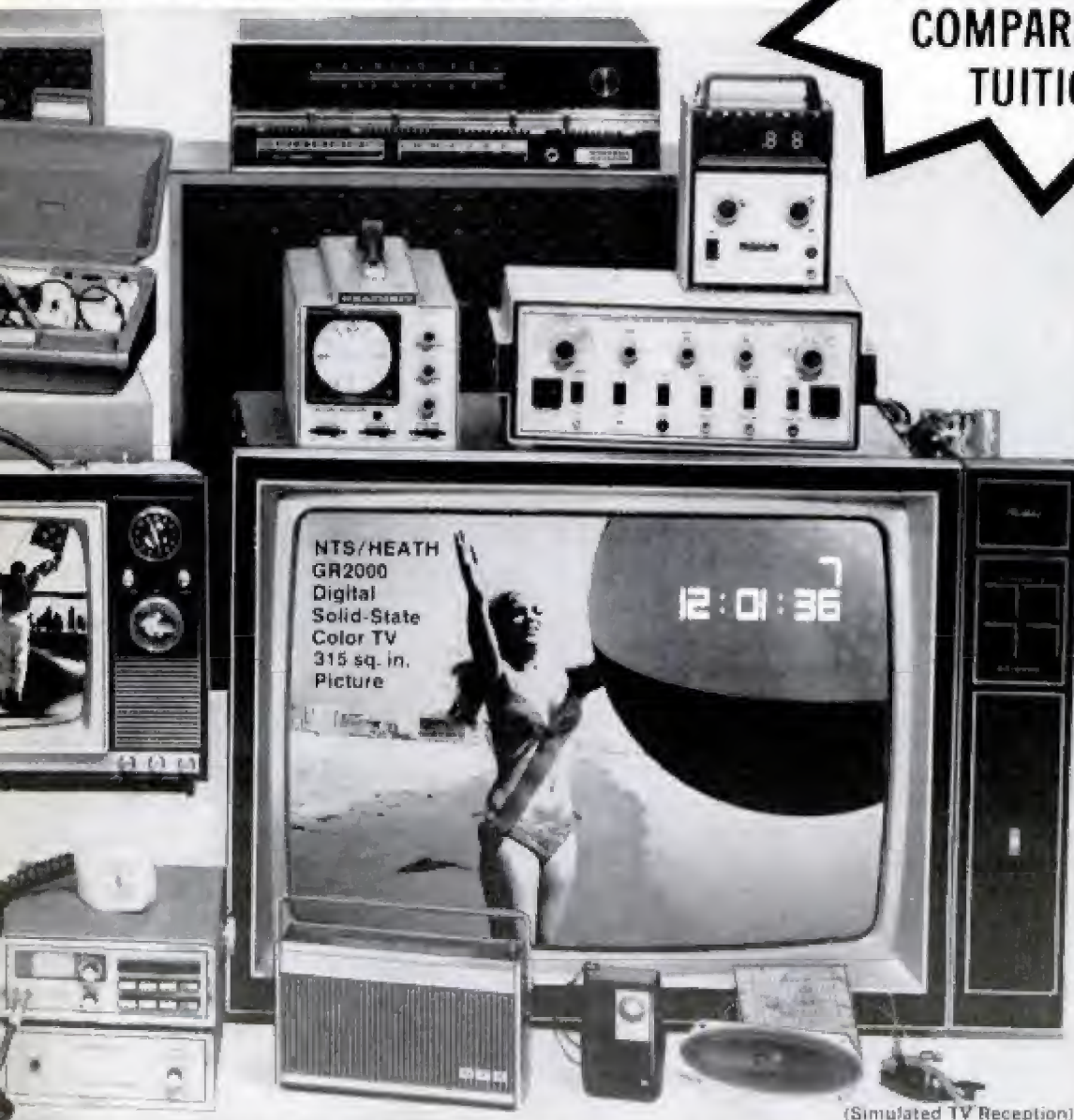
AIR CONDITIONING, REFRIGERATION/HEATING DIVISION: Learn servicing of commercial, industrial and residential heating and cooling equipment. Courses include hermetic unit analyzer, leak detector, charging testing-purging manifold set, tools and more.

HOME APPLIANCES DIVISION: Courses cover repair and maintenance of washers, dryers, ranges, smaller appliances. Equipment includes NTS Circuit-Trainer and professional multimeter.

and the equipment be equipped.

Career Guides:

COMPARE OUR
KITS AND LESSONS.
COMPARE OUR
TUITION.



(Simulated TV Reception)



LOWER TUITION FOR YOU: We employ no salesmen, pay no commissions. You receive all home-study information by mail only. Make your own decision, your own comparisons. Send card today or write for illustrated catalog in field of your choice, all details.

NO OBLIGATION. NO SALESMAN WILL CALL.

APPROVED FOR VETERAN TRAINING
Get facts on new 2-year extension.

NATIONAL TECHNICAL SCHOOLS

TECHNICAL-TRADE TRAINING SINCE 1905
Resident and Home-Study Schools
4000 So. Figueroa St., Los Angeles, Calif. 90037

NATIONAL TECHNICAL SCHOOLS
4000 South Figueroa St., Los Angeles, Calif. 90037
Please send FREE Color Catalog and Sample Lesson.
NO OBLIGATION. NO SALESMAN WILL CALL.

Dept. 201-026

- ☐ Electronics Division
- ☐ Mechanics Division
- ☐ Air Conditioning/Refrigeration/Heating Division
- ☐ Home Appliances Division

NAME _____ AGE _____

ADDRESS _____

CITY _____ STATE _____

Please fill in Zip Code for fast service _____

- ☐ Check if interested in G.I. Bill information.
- ☐ Check if interested ONLY in classroom training in Los Angeles.

ALL OUTDOORS

WITH BILL McKEOWN



No argument, except over method

There is no argument that we all want to protect and preserve the mountains, fields and streams that make up our outdoor heritage. But start discussing methods and you've got a fight right away.

Recently this department has been getting more letters calling for banning four-wheel-drives and snowmobiles, trailbikes and recreational vehicles, guns and powerboats, fish finders and climbing pitons. And then there are the writers who claim that any regulation, license, limit, or registration does no good and is an infringement on personal liberty. One group would probably claim that cars should be outlawed because they kill people. The others would cancel all drivers' licenses because they obviously don't prevent accidents.

Most of the damage to environment and people doesn't seem to occur, however, until the various machines are used by someone. Perhaps a moderate course somewhere between total prohibition and the repeal of all regulations, plus some constructive education, is a better answer to many outdoor problems.

Hy-foil bonus

Late word just in from Ken Cook, designer/engineer of the hydrofoil sportabout (page 94 of this issue), is that build-and-fly boatmen can cut costs now by buying the craft in kit form from the Red Bank, N.J., Hydrofoils Inc. Instructions with the new kit, however, should probably be followed closely—our impression of this form of flying afloat is that your creative modifications of the plans should come later.

Snow sport

Racing—the snomo competition that did so much to develop the sport—is back and just may build up snowmobiling again. Once more, factory teams are afield; names like Yamaha, John Deere, Mercury, Ski-Doo, Arctic Cat, Polaris and Scorpion are scoring at the SnoPro and SnoAm ovals and cross-country marathons. No snomo (or outboard or trailbike) owner likes a team of factory professionals to move in and wipe him out, but the builder demonstrations

do a lot to show what's possible with a hot machine. Action this winter indicates the industry shake-out may be over, and snowmobiling as a sport can get back to normal growth again.

► Farther afield, for skiers who can schuss over to Switzerland next month, the Engadine Eighth World Cross-Country Marathon is a 26.2-mile classic that just about anyone can try. Over 25,000 entries are expected, and all finishers within the six-hour time limit receive a stamped start number and printed results. Entry information is available from Swissair.

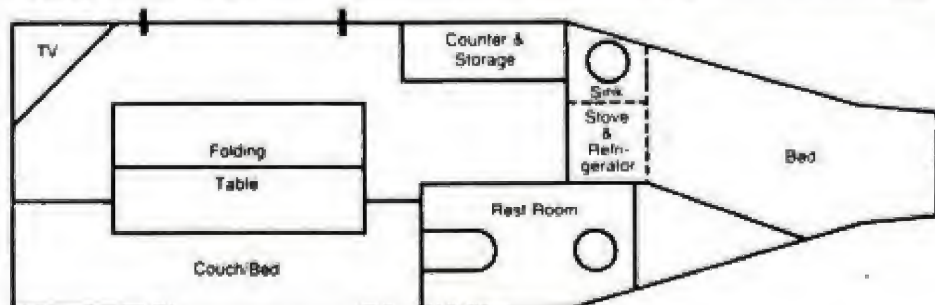
Vertical getaway

Not only is Winnebago sleeking up its familiar RV shoe-box shape, but it has streamlined one model into a chopper-built-for-six. Named Winnebago Heli-Home, it comes with air-conditioning, bath with hot shower, stove and refrigerator, dinette, bar, beds, and a rather considerable price tag of \$180,000 for the 800-hp Sikorsky H19 helicopter and Winnie conversion. But for a company that can

Administration, *Nautical Chart Symbols and Abbreviations*, giving important notation changes. Instead of the dot over each navigational buoy, for example, there's a circle reminder that the mark may swing with tide or current, or sometimes drag anchor, and become a collision hazard if visibility is low. There's a good review of all chart symbols.

For dodging water hazards, stuntman Hal Needham claims a world record with a 138-foot jump in a Cobia boat mounting a Johnson 135 outboard and a jet-assist rocket. The launch off a water-ski ramp was filmed for a new movie, "Gator."

High-flying RV. Winnebago's answer to technical climbing, is an 800-hp Heli-Home.



call one a business cost to take clients camping, or for a well-heeled outdoorsman, Winnebago seems to have the up-and-away answer.

Buoys that get around

Boat owners ordering updated charts each year—(You don't? You should)—ought to get a new booklet from the National Oceanic & Atmospheric

Fish story

Honest records of the largest fish ever caught are being compiled at the new National Fresh Water Fishing Hall of Fame at Hayward, Wis. Junior and senior categories for bait casting or spinning, fly casting, pole and line, and all tackle are being set up. Forms for submitting records are available. ★★

Dodge is 3 up on every other pickup made in America.

1. Dodge has the lowest-priced pickup. **1.** Lower than Ford. Lower than Chevy.

If you know trucks, then you know Dodge. You know all about how tough we build our trucks. And you know how well we engineer them. But maybe you didn't know that Dodge makes America's lowest-priced full-sized pickup. The Dodge D-100.* (Based on comparison of manufacturers' suggested retail prices for 6 cylinder half-ton pickups excluding optional equipment, state and local taxes, destination charges.)

2. Dodge got the best gas mileage. **2.** Better than Ford. Better than Chevy.

Getting great gas mileage is getting to be a habit with Dodge.

In the latest EPA tests, a '76 Dodge D-100 powered by a 225/6 cylinder engine with a manual transmission turned in an estimated mileage of 25 miles per gallon on the highway. And 18 in the city. Of course, the actual mileage you get will vary depending on the type of driving you do, your driving habits, your truck's condition and optional equipment. In California, see your dealer for mileage data for California equipped vehicles.

3. Dodge has the biggest standard payload. **3.** Bigger than Ford. Bigger than Chevy.

Dodge has a payload that can make small work of the biggest jobs. Without beefing it up one bit, you can haul off a whopping 1,505 pounds.



3 big reasons why the man who'd rather drive a truck than a car would rather drive a Dodge.



CHRYSLER
CORPORATION

*Pickup shown - The Dodge D-100 Adventurer will be priced higher because of optional equipment



Dodge

Dodge Truck



WORLD'S SMALLEST ELECTRONIC CALCULATOR \$19.95!

Does Everything Big Ones Do

Small but mighty! 8-digit, 4-function electronic calculator even has automatic % key... for only \$19.95. Take it anywhere. Carry it in your pocket or purse — it's $\frac{2}{3}$ the size of a pack of cigarettes. This $\frac{3}{4}$ -ounce dynamo features floating decimal, constant key, lead zero depression, clear entry, more! At Edmund's low price, the unit comes with a Ni-Cad rechargeable battery pack that can plug into any AC outlet. No need for special recharging adapters. Calculator overall is just $2 \times 3\frac{1}{2} \times \frac{3}{4}$ " with plenty of room for most fingers. Another Edmund first with advanced technology. **\$19.95** ppd.

STOCK NO. 1945H Only

GIANT FREE CATALOG!

NEW 172 Pages.
Over 4,500 Un-
usual Bargains
for Hobbyists,
Schools, Industry.



JUST CHECK
COUPON!

**EDMUND
SCIENTIFIC CO.**
300 EDCORP BUILDING
Barrington, N. J. 08007

America's Greatest
Science • Optics • Hobby Mart

COMPLETE AND MAIL COUPON NOW

EDMUND SCIENTIFIC CO. 300 EDCORP Bldg., Barrington, N. J. 08007

☐ SEND FREE

172 PAGE CATALOG

☐ Charge my BankAmericard

☐ Charge my Master Charge

Interbank No. _____

Card No. _____

Expiration Date _____

30-DAY MONEY-BACK GUARANTEE. You must be satisfied or return any purchase in 30 days for full refund.

Send me:

☐ ELECTRONIC CALCULATOR(S)

@ \$19.95 ea. (No. 1945H) \$ _____

Service and handling charge \$ _____

Enclosed is

☐ check, ☐ m.o. in amount of \$ _____

Signature _____

Name _____

Please print

Address _____

City _____

State _____

Zip _____

HELPING TO DEVELOP AMERICA'S TECHNOLOGY FOR OVER 30 YEARS.

PHOTO HINTS

FROM READERS

Drying film-tank aprons fast



Those plastic aprons used instead of reels in some developing tanks dry fast—except for the looped end. But you can easily speed up the drying process by stuffing a rolled-up paper towel inside the end loop to absorb moisture. Wooden spring clothespins at the apron ends keep it from curling; the clothespin at the looped end should be clipped to the paper towel as shown.

—Grace Weinstein, Los Angeles.

Filtering chemicals quickly



Photographic chemicals should be filtered before you use them to eliminate any impurities. But put the filter in your funnel and the long wait while the chemicals drip through can strain your patience. By putting the filter in a strainer suspended in a funnel as shown above, you can filter a gallon of solution in a few minutes. Make sure that you use a filter with no center hole.

—Lane Sander, Yakima, Wash.

Clean spark plugs can
save you 1 to 2 gallons
of gas per tankful

**TURBO-
BLAST**

Amazing New Spark Plug Cleaner

SAVE GAS... AND
GET UP TO 50,000
MILES ON YOUR
SPARK PLUGS

- ★ Rugged 12,000-RPM motor—plugs into any household outlet
- ★ No compressed air or batteries
- ★ Comes with glass bead abrasive to clean 250 plugs. Additional beads available.

Cleans any plug
in seconds!



JAYCRAFT CORP. DEPT. PM2
760 North Marshall Ave., El Cajon, CA. 92020

Name _____

Address _____

City _____

State _____ Zip _____

\$19.95 plus \$1.55 shipping & handling. California residents add state sales tax.

SATISFACTION GUARANTEED
or return within 30 days for refund



**FREE Aptitude
Test!**

Find Out
if You May
Qualify For a

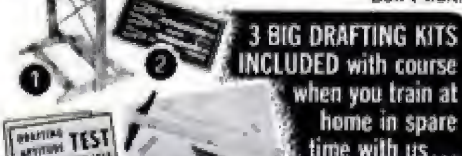
**GOOD PAY
CAREER in
DRAFTING!**

No Cost... No Obligation

This is your chance to test yourself—and discover whether you may have the natural ability to train for a rewarding future as a draftsman—designing exciting new products, machinery, buildings, airplanes, cars, etc. Many people have this valuable talent without knowing it. Draftsmen are in big demand at high pay.

Enjoy a career where the jobs and money are!

U.S. Labor Dept. reports drafting jobs are on increase. American Institute for Design & Drafting Survey reveals salaries are up 25% in last 3 years. Don't wait!



**3 BIG DRAFTING KITS
INCLUDED** with course
when you train at
home in spare
time with us...

We'll send you
this **SELF-TESTING KIT** including
Valuable 5-Way Drafting Instrument **FREE!**
RUSH COUPON TODAY!

Careers by Home Study
North American School of Drafting, Dept. PM216
Testing Dept., 4500 Campus Dr., Newport Beach, Ca. 92660
Yes, I want to test my aptitude for Drafting.
Please rush my free Test Kit. No salesman will call.

Name _____ Age _____

Address _____

City _____ State _____ Zip _____

2800mg. tar a week you can lose...with Pall Mall Extra Mild.

Two-pack-a-day smokers, here's good news.

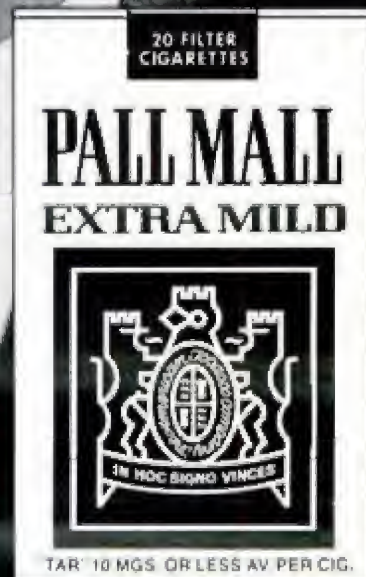
Say your present cigarette has 20 mg. tar. Pall Mall Extra Mild has only 10 mg. tar. That means each Pall Mall Extra Mild can save you 10 mg. tar.

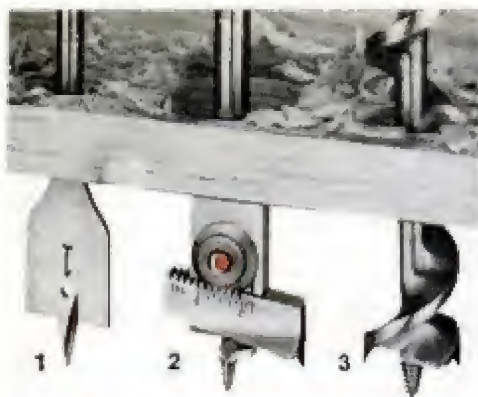
A pack saves 200 mg. tar.
A week's smoking, 2800!

With Pall Mall Extra Mild's great taste you don't miss those 2800 mg. of tar.



Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.





3 easy ways to bore holes faster

1. Irwin Speedbor® "88" wood bit for all electric drills. Spade-type head, exclusive hollow ground point. Starts fast, cuts fast. 17 sizes, $\frac{1}{4}$ " to $1\frac{1}{2}$ ", and sets.

2. Irwin No. 22 Micro-Dial® hand brace expansive bit bores 35 standard holes, $\frac{1}{8}$ " to 3". Just dial your size. No. 21 bores 19 standard holes, $\frac{5}{16}$ " to $1\frac{1}{4}$ ".

3. Irwin 62T Solid Center hand brace bit. Delivers double-cutter boring action. Medium-fast screw pitch. Balanced cutting head. 18 sizes, $\frac{1}{4}$ " to $1\frac{1}{2}$ ", and sets.

Every Irwin Wood Bit precision-engineered of finest tool steel, heat treated full length and machine-sharpened. They last, bore fast. Buy Irwin . . . buy the best.



Speedbor "88"
Sets, 6 and 13-bit sets in metal storage rack.

Strail-Line® Chalk Line Reel Box
50 ft. & 100 ft. sizes

Popular-priced Irwin self-chalking aluminum alloy box. Easy action reel. Leak proof. Practically damage proof. Fits pocket or hand.



IRWIN® every bit as good as the name
at Wilmington, Ohio 45177, since 1885



Send for New 1976

WOOD and woodshop supplies CATALOG

New
MINI-DOLLHOUSE
FURNITURE KITS—
NEW MINI-LATHE

Fine domestic and imported Hardwoods . . . dimensions, blocks, plywoods. Everything for your shop . . . hand and power tools, upholstery and lamp supplies, cabinet hardware, clock and inlay picture kits, much more - in stock. For catalog send 50¢ for handling, postage to:

CRAFTSMAN WOOD SERVICE
Dept A-26, 2729 South Mary Street
Chicago, Illinois 60608

PRO QUALITY AUTO BODY REPAIR PRODUCTS THE BEST YOU CAN BUY

BOND TITE



BOND-TITE FILLER KITS Famous White Diamond Filler featuring color change mixing. Bond-Tite used by the Pro's for over 20 years.

FIBERGLASS — Kits, Resin, Mat, Cloth and Hardener for repairing any rigid clean surface. Great for customizing and restyling.



TOOLS & ACCESSORIES
Use the tools of the trade for best results . . . new Bond-Tite hammers, dollies, dent puller, flex-sander, shaping files, abrasive discs, plastic applicators and tack rags.

FREE "HOW-TO-DO-IT" BOOKLET
12 pages of step-by-step body repair tips. For FREE copy send self-addressed envelope to:



Oatey Consumer Products Division
Dept. P, Cleveland, O. 44135

WHY ARE TV ACTORS AMONG THE RICHEST PEOPLE IN THE WORLD?

No one knows just how rich people like James (Gunsmoke) Arness, Lucille (I Love Lucy) Ball, Robert (Dr. Welby) Young, Danny (Daddy) Thomas are, but it is in the millions of dollars. How do they do it? It is really quite simple. It is called *residuals*. Every time a TV show is replayed and played again these people receive more money. Yet, they do not have to lift a finger to do it! NOW, there is a way for you, Mr. Average Man, to participate in residuals. I have a product which once put on location demands no additional servicing. Once a year, that's right, once a year, you bill the client for a full year in advance! The rest of the time you can loiter in the Bahamas or swing at Las Vegas, for your business keeps working for you!

However, you must work to set up the initial locations. This is imperative. One year will be given to hard work, but like the hard-working TV performers, you will then have your own residuals.

This is my own program. There is no other. Send me your name and address on a postcard and I'll tell you more about it.

Hank Williams, Dept. A-2-FB,
1512 Jarvis, Chicago, Ill. 60626.

QUICK SHOP PROJECT

Tee game

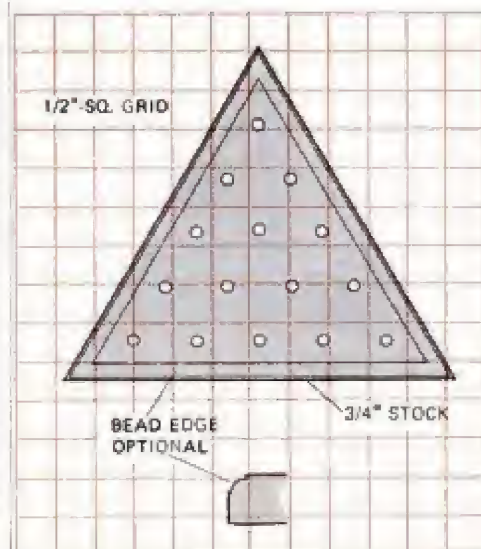


A simple and fast shop project, this puzzle can be turned out by the score for gift-giving or for use as door prizes at church affairs and the like. Playing the game, however, is a bit more difficult.

The object of the game is to eliminate all of the tees but one by jumping one tee at a time. There are about five combinations (I think) that will accomplish this feat. Just learning them will keep noisy youngsters quiet for a spell.

Make the puzzle board of hardwood if you want it to last. The beaded edge isn't a must, but it does dress up the appearance considerably. Use a tung oil to finish the wood.

—Mel Crosby



NOTICE

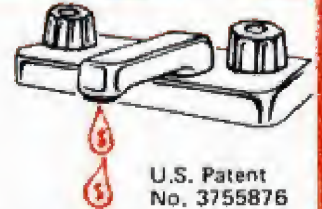
**LAST TIME OFFERED
AT THE OLD
1973 PRICE - \$7.45**

WE HAVE NOT RAISED OUR PRICES SINCE 1973, BUT EVERYONE SUPPLYING US HAS:

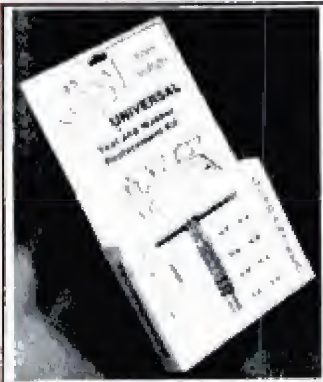
- | | | | | | |
|------------|--------|-------------|--------|---------------|--------|
| • Postage | UP 33% | • Stainless | UP 70% | • Aluminum | UP 40% |
| • Printing | UP 25% | • Delrin | UP 42% | • Advertising | UP 28% |

We stocked up heavily on materials in 1973. These stocks are now about gone. Our new price will have to be in the \$10 to \$11 range.

STOP DRIPPING FAUCETS FOREVER With Stainless Steel



U.S. Patent
No. 3755876



Guaranteed to work on any conventional faucet or we'll refund every penny.

Guaranteed to last the life of your faucet . . . carries a no time-limit money back guarantee.

If you want to permanently stop a leaking faucet, just changing the washer is not the answer (ask any plumber). Conventional faucet valve seats are made from brass and will corrode, pit and wear out. *This is the cause of 90% of all faucet leaks!* Replacing the washer may work temporarily, but only until it is again chewed up by the bad valve seat. With over 100 different sizes and thread combinations, replacing the valve seat can be both difficult and expensive — and you still end up with a brass seat — only to start the corrosion cycle again.

NO PLUMBER — NO SPECIAL TOOLS — NO SPECIAL SKILLS

With our VULCAN UNIVERSAL FAUCET RESEATING KIT you can stop this sort of leak FOREVER. You get 8 universal valve seats made of high grade surgical stainless steel — the same 304SL stainless steel used in atomic reactors and submarines. Because of their strength and resistance to corrosion, we offer a no-time-limit money back guarantee. The installation tool which comes with the kit insures that the seats will fit perfectly any faucet that uses washers — because the Vulcan stainless seat mounts right in your old seat (you don't remove it).

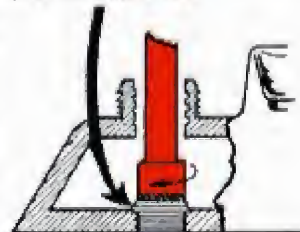
UNSOLICITED TESTIMONIALS

- * "Please send me your complete Vulcan Repair Kit. I loaned mine to a friend — you guessed it — never returned. I used it in my home and have been completely satisfied. No leaks and it really helps in the night, sleep peacefully now. Thank you again for freedom from drips." G.D.W. San Antonio, TX
- * "I am more than pleased with both the method of installing and the results. This is the first time in three years I don't have either a leaking faucet or one that swells and cuts off the hot water." J.M.C. Woodbridge, VA
- * "Please send me one dozen Vulcan Faucet repair seats and washers, with adhesive. You may like to know that I have installed 4 seats from the original kit and am very well-pleased and enthusiastic about your product." G.F.M. Sunnyvale, CA
- * "This item, I have been searching for, for at least twenty years." A.R.S. Cleveland, OH
- * "Your prompt revised instructions saved the day. Works fine! Will be happy to recommend your product to handyman friends and acquaintances." N.S.D. Montpelier, VT
- * "Some time ago I ordered two of your Universal Faucet Repair Kits and people thought they were so great I have exactly NONE! I'd appreciate it if you'd forward me another kit . . . You've a wonderful item and everybody should have one to conserve water if for no other reason." H.H.F. Hillsdale, MI
- * "I have been using your universal faucet repair kit, and am amazed at the restoration of old faucets. I am in need of additional seat and washer sets. Please find enclosed check for 12 additional sets." H.W., Apt. Hs. Mgr. Seattle, WA
- * "Several years ago I supplied all the faucets in my house with your seats and washers and, I am glad to say, I have not had a drip since. Now, I have some other faucets to take care of and as I still have your tool all I need are some seats, washers and adhesive. I am enclosing my check for an additional dozen sets." S.B.C. Montague, CA
- * "Kit works good, and your technical writer sure seems to know his business." S.G., San Diego, CA

These seats come with 8 matching non-expanding universal mated washers made of Delrin® — a material so tough it is used in making gears. With these washers you also end the annoyance of old fashion rubber washers that swell and cut off your hot water — usually right in the middle of washing your hands or during a shower.

HOW OUR KIT WORKS: A special hand tool cuts groove in your old faucet seat.

Delrin® washer is universal. Does not need to fill up washer holder. Does not need side support.



Surgical stainless steel seat held in groove with space age adhesive sealant.

If you follow the simple do-it-yourself illustrated instructions that are included with your kit, you can hardly go wrong. You can repair any standard faucet that uses a washer and seat — no matter what brand or age.

THE VULCAN KIT CONTAINS: 8 stainless seats, 8 mated Delrin® washers, installation tool, adhesive sealant, illustrated instructions and an Unconditional No-time-limit Money Back Guarantee. The price of the kit — enough to repair 8 single faucets is only \$7.45 Ppd. Vulcan Mfg. Co., Box 33, Dept. PM74, Grand Valley, Colorado 81635

MAIL THIS NO-RISK COUPON TODAY

Order today at the old price - \$7.45 p.p.d. for your future needs. * Kits mailed same day order received.

Please rush!

- ☐ Vulcan Reseating Kit — Includes 8 stainless seats, 8 Delrin® washers, 1 tube adhesive, illustrated instructions — \$7.45 Ppd.
- ☐ Vulcan Reseating Kit — includes 8 stainless seats, 8 Delrin® washers, 1 tube adhesive, illustrated instructions PLUS 6 extra stainless seats, 6 Delrin® washers, 1 tube adhesive — \$9.95 Ppd.
- ☐ Vulcan Reseating Kit — Includes 8 stainless seats, 8 Delrin® washers, 1 tube adhesive, illustrated instructions PLUS 12 extra stainless seats, 12 Delrin® washers, 2 tubes adhesive — \$11.95 Ppd.
- ☐ Stainless seats with matching Delrin® washers, 2 tubes adhesive — \$4.50 per doz. sets, Ppd.

I understand that my money will be immediately refunded if I am not 100% satisfied with the kit.

VULCAN MFG. CO., Box 33, Dept. PM 74, Grand Valley, CO 81635

Enclosed \$ _____ check or money order, Charge to my:

☐ MASTER CHARGE ☐ BANKAMERICARD

Full Card No. _____ Expiration Date _____

* Canadian Customers: Please order from OPTIMUM, 100, Place Charles Lemoyne, Suite 254, Longueuil, Que. J4K 2T4

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

ATTENTION Apt. House Managers, Plumbers, Motel & Hotel Men: Send us a couple of old seats; we'll mount two Vulcan seats FREE as a demonstration.

Used in Thousands of U.S. Homes & Businesses

Instant port for oil tankers

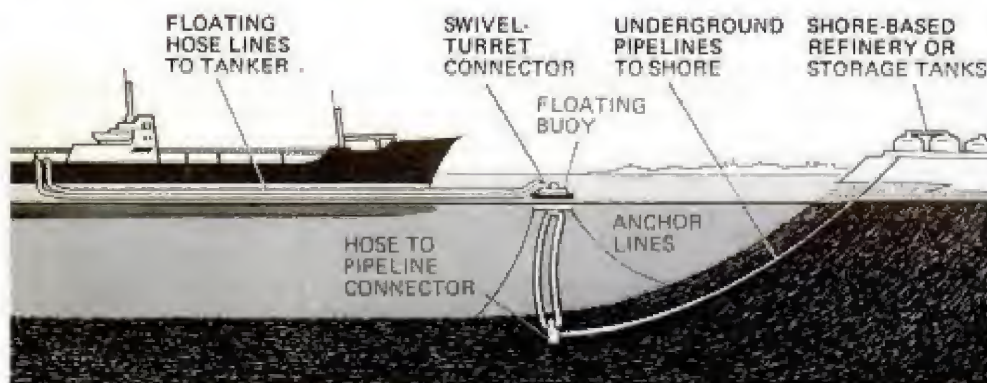
by Norman Sklarewitz

A huge, heavily laden oil tanker ties up to a floating buoy, hooks onto hose lines and starts pumping out its cargo—with no land in sight. It doesn't need any help, doesn't need to go through tricky docking maneuvers, doesn't even need a harbor to anchor in.

Pioneered by Imodco, Inc., of Los Angeles, such SBM (Single Buoy Mooring) terminals are saving precious cargo-transfer time and millions of dollars in port facilities. An SBM can be stationed up to 60 miles offshore, requires no operating personnel, is unaffected by raging seas and can handle up to five different liquid transfers at the same time. A tanker can, for instance, offload jet fuel, gasoline and diesel oil—all simultaneously—while also taking on fuel for its own use.

Lines below the buoy lead down to the bottom where submarine pipelines carry their contents to shore-based refineries or storage tanks. The

process can also be reversed—a tanker can be loaded from shore without ever coming into port. A swivel connector allows the ship to swing freely with wind, tide or current changes without interrupting the transfer. In multiple-buoy systems, a tanker is fixed-moored and often must suspend operations while it changes position or rides out a storm. SBMs range up to 50 feet in diameter and may weigh 140 tons. More than 100 are already in place, mainly in the Mid and Far East—helping to speed petroleum products to an oil-hungry world. ★ ★ ★



65,000 more technicians needed by 1980*

Learn Air Conditioning, Refrigeration and Heating.

Learn at Home With NRI's Master Course Program In Your Spare Time

Start a well-paid career in the field of air conditioning, refrigeration & heating with practical at-home training from NRI. The NRI program was developed with technical assistance from the York Division of the Borg-Warner Corporation and it uses bite-size texts, fine professional instruments and tools, and "hands-on" kits to make learning easy.

Air Conditioner System comes with Course for Trouble Shooting.

You get a Circuit Demonstrator, Control Simulator, tubing and joint-making demonstrator, leak detector, system analyzer, and a window air conditioner unit for hands-on experiments.

Optional Resident Training at Famous York Institute

Graduates of the Master Course may take advanced work at the world-famous York Institute Resident School at no extra charge. Working with expert instructors you will receive practical experience equal to months of on-the-job work.

Send for your free catalog.

Just check the card opposite. No salesman will call.

Approved for career training under GI Bill.



*U.S. Dept. of Labor Bulletin 1824

No other TV/Audio home study school puts prices in its ads. Why?

Maybe it's because they can't match these values

NRI will give you complete TV/Audio service training with a solid state 25" diagonal color TV and a 4-speaker Quadraphonic System for less than the tuition cost of TV or Audio alone from the next leading school. Only NRI gives you a choice of five ways to learn, starting as low as \$370 . . . with convenient, inexpensive time payment plans.

NRI pays no salesmen. We buy no outside "hobby kits" for our experiments and training kits. We pass the savings on to you, giving you the top educational value available anywhere.

Take your choice in TV/Audio training

Only NRI gives you a choice of five courses in TV/Audio servicing. Each comprehensive course features bite-size lessons, special reference texts,

special engineered "power-on" training kits, and service instructions for black and white TV, color TV, FM multiplex receivers, PA systems, antennas, radios, tube, digital circuitry, transistor, and solid state circuits.



NRI SCHOOLS
McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue,
Washington, D.C. 20006



good



better



better yet



best



advanced

7 kits including Quadraphonic Stereo...\$370

or low monthly terms

A basic TV/Audio Servicing Course including 7 training kits for your experiments. You build your own 4-speaker Quadraphonic System, solid-state volt-ohmmeter, CMOS digital frequency counter, and electronics "Discovery" lab. Includes 48 bite-size lessons (18 on color TV), 10 special reference texts with hundreds of servicing shortcuts, tips on setting up your own business, etc. This completely up-to-date course covers black & white and color TV, FM multiplex receivers, public address systems, antennas, radios, tube, transistor and solid-state circuits.

11 kits with Quadraphonic Stereo and B/W TV...\$465

or low monthly terms

A complete course in B&W and Color TV Servicing, including 48 lessons (18 on color TV), 10 special reference texts and 11 training kits. Kits you build include 4-speaker Quadraphonic System, solid-state volt-ohmmeter, CMOS digital frequency counter, electronics "Discovery" lab, plus a 12" diagonal solid-state black & white portable TV to build and use. At each assembly stage, you learn theory and "Power-On" application of that theory in typical solid-state TV sets.

11 kits with 19" diagonal color TV...\$795

or low monthly terms

The course includes 42 lessons and 4 reference texts plus kits and experiments to build a superb solid-state 19" diagonal color TV receiver . . . complete with cabinet, and engineered specifically for training by NRI's own engineers and instructors. This handsome set was designed from the chassis up to give you a thorough understanding of circuitry and professional trouble-shooting techniques. You build your own solid state volt ohmmeter, CMOS digital frequency counter, and experimental electronics "Discovery" lab.

14 kits with 25" diagonal color TV and Quadraphonic Stereo...\$1095.00

or low monthly terms

The ultimate home training in Color TV/Audio servicing with 48 bite-size sessions, 10 reference texts, and 14 training kits . . . including kits to build a 25" diagonal color TV, complete with console cabinet; a 4-speaker Quadraphonic Center; a wide band, solid-state, triggered sweep, service type 5" oscilloscope; digital integrated circuit color TV pattern generator; a CMOS digital frequency counter, and an electronics "Discovery" lab. This gives you both TV and Audio training for less than the price of TV or Audio alone from the next leading school!

This Master Course combines theory with practice, using the "Power-On" stages for experimentation and learning. Building NRI's equipment will give you the confidence and ability to service any color TV or Audio unit on the market. And you'll have a magnificent TV and quadraphonic system for years of trouble-free performance.

Advanced Pro Color with 19" diagonal color TV...\$645

or low monthly terms

An advanced Color TV Servicing Course for experienced technicians, 18 lessons, 5 new "Shop Manuals", and NRI 19" diagonal Color TV receiver with cabinet.

America's coolest cigarette and the



Grand Prize:

The \$100,000 63-foot yacht "Lucky Lady" or \$100,000 cash! It's the actual boat used in the making of the spectacular new 20th Century-Fox adventure film, *Lucky Lady*, starring Gene Hackman, Liza Minnelli, and Burt Reynolds.

10,000 Second Prizes:

Two tickets for the picture *Lucky Lady*. Two things about this sweepstakes are extra cool. One is the great taste of KOOL cigarettes. The other is the 63-foot, \$100,000 yacht "Lucky Lady." It's the yacht sailed by Gene Hackman, Liza Minnelli, and Burt Reynolds in

the production of the sensational new 20th Century-Fox movie *Lucky Lady*. And the yacht, or, if you prefer, a cool \$100,000 in cash, just might become yours if you win the KOOL "Lucky Lady" Sweepstakes. To enter, follow the official contest rules and mail in the entry blank. Then you'll be eligible for the drawing of the winner of "Lucky Lady," or two tickets for the film. Who knows? You may be sailing over cool waters or counting all that cool, green money. It's one of the coolest sweepstakes ever from the coolest cigarette ever. That's KOOL—Filter Kings, Super Longs, Milds and Box.



Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

new year's hottest movie present...

THE KOOL LUCKY LADY SWEEPSTAKES

KOOL cigarettes proudly presents... THE KOOL LUCKY LADY SWEEPSTAKES.

Official Rules: 1. To enter, print your name, address, and zip code on the entry blank, or on a 3" x 5" sheet of paper. Mail to KOOL "Lucky Lady" Sweepstakes, P.O. Box 4448, Chicago, Illinois 60677. Enter often, but each entry must be mailed separately. **NO PURCHASE NECESSARY!** 2. Each entry must include two empty packs of KOOL, or a 3" x 5" piece of paper on which you have printed the words "COME UP TO KOOL" in plain block letters. Entries must be postmarked by March 1, 1976. 3. Prizes. The Grand Prize—the 63' yacht "Lucky Lady," valued at \$100,000 or \$100,000 cash, 10,000 second prizes—two tickets to the film *Lucky Lady*. Tickets are non-transferable and not redeemable for cash. 4. Grand Prize-winner chooses yacht or cash. The yacht will be delivered to the winner at its berth in California. Payment of Federal, state, and local taxes imposed on the prizewinner and the cost of delivering the yacht to the winner's home city are the sole responsibility of the prizewinner. Prize is non-transferable. 5. Winners will be selected in a drawing conducted by H.



Olsen & Co., the results of which will be final. The odds of winning will be determined by the number of entries received. All prizes will be awarded. Grand Prizewinner must agree to use of his name and picture for this promotion. 6. This sweepstakes is open only to residents of the United States 21 years of age or older. Employees of Brown & Williamson Tobacco Corporation, its affiliate companies, advertising agencies, H. Olsen & Co., 20th Century-Fox Films, Inc., and their advertising agencies, and their families are not eligible. Void in Missouri and wherever else prohibited or restricted by law. All Federal, state, and local laws apply. 7. For the name of the Grand Prizewinner, send a separate stamped, self-addressed envelope to: KOOL "Lucky Lady" Winners, P.O. Box 6353, Chicago, Illinois 60677.

KOOL "Lucky Lady" Sweepstakes
P.O. Box 4448
Chicago, Illinois 60677

Please enter me in the KOOL "Lucky Lady" Sweepstakes. I certify that I am at least 21 years of age and have read the official rules.

Name _____ (PLEASE PRINT)

Address _____

City _____ State _____ Zip _____ (REQUIRED)

NO PURCHASE NECESSARY

Kings, 17 mg. "tar," 1.3 mg. nicotine; Longs, 17 mg. "tar," 1.2 mg. nicotine, av. per cigarette, FTC Report Nov. '75

SCIENCE WORLDWIDE



To avoid a flash in the pan

The photo above doesn't show a visitor from outer space. It shows a man wearing light-actuated goggles developed at Sandia Laboratories, Albuquerque, N.M. They're designed to protect military pilots against eye damage and skin burns in the event of a nuclear detonation.

The lenses consist of a layer of ceramic sandwiched between polarizing elements. When a voltage is applied to the lenses, it induces atomic units to move into an "orderly" arrangement, permitting the transmission of polarized light. The goggles are "open." However, when a sensor detects increased light levels it causes the voltage to be cut off. Within microseconds, the goggles become opaque, allowing virtually no light to pass through. As the light intensity diminishes, the lenses gradually "open" again.

No refrigeration for this milk

Within 5 to 10 years, the purchase of unrefrigerated fresh milk could become commonplace, creating energy savings that ultimately would benefit the consumer. This revolution in marketing could be brought about by a process invented by scientists at North Carolina State University.

Milk is normally pasteurized or partially sterilized by bringing it to

high temperatures for a short time. Not all bacteria are killed; those remaining will turn the milk sour if it is not refrigerated. However, heating the milk to very high sterilization temperatures gives it a "cooked" flavor distasteful to most milk drinkers. Their process, explain the scientists, restores good flavor to sterilized milk. They say they have isolated an enzyme, sulfhydryl oxidase, that causes a group of chemicals—the sulfhydryls—to convert into disulfides, restoring the milk's flavor. The sulfhydryls are produced in milk proteins when heated.

"The ability to process ultrahigh-temperature sterilized milk with a flavor indistinguishable from the present pasteurized milk would mean that, after processing, the milk could be transported and displayed in the grocery without refrigeration," say the researchers.

Data transmission by laser

A worldwide laser communications system will soon be under development for the Air Force by the McDonnell Douglas Corp. It would use three synchronous satellites 22,000 miles above the Earth to relay messages over laser beams among aircraft, ground stations and other satellites. The space laser would be able to transmit a billion pieces of data per second, say McDonnell Douglas officials, which is 20 times the volume of data now sent over a commercial satellite communications link.

Have a chunk of water

One pound of a new "superslurper" can turn 1400 pounds of water into a rubbery gel. Superslurpers, recently developed by Dept. of Agriculture scientists, are starch and petrochemical combinations that hold water in a swollen duplication of their dry forms. Dry films, for example, expand and thicken to become gel sheets. Flakes or powders become piles of water made up of particles resembling crushed ice.

The scientists foresee many fluid-handling applications for the slurpers. Mixed with a sandy soil, they would stop wind erosion. They also could be used to gel water for easier handling of industrial and animal

wastes. As a coating on bandages, they would keep wounds dry. In a series of tests, diapers coated with a superslurper absorbed 20 times more urine than did standard cotton jobs. That alone should make the slurpers a success.

For skiers who get bad 'vibes'

Fast-moving downhill skiers sometimes have trouble with hard-packed snow. It sets up excessive vibrations in the skis, causing a skier to lose control. A new ski made by Olin Ski Co., Middletown, Conn., gets around the problem neatly.

The ski is made like a sandwich, with structural fiberglass components on top and bottom and a layer of damping material in the middle. The "damper," which runs almost the full length of the ski, is a polymer made up of tangled, chainlike molecules. When a vibrational force is applied,



the molecular chains become extended. When they meet resistance from neighboring molecules, they discharge energy in the form of heat. Then, because of the elastic nature of the chains, they quickly "snap back" to their original form, reducing vibrational magnitude. In the photos above, the Olin ski and that of a competitor had similar vibrational forces applied to them. As the bottom photo shows, the competitor's ski continued to vibrate after the Olin ski had come to rest.

★★★

Barf National Park, Alberta, Canada



Canada at its best.

Try the light, smooth whisky that's becoming America's favorite Canadian.
Imported Canadian Mist®

IMPORTED BY BROWN-FORMAN DISTILLERS IMPORT COMPANY, N.Y., N.Y., CANADIAN WHISKY—A BLEND, 80 OR 86.8 PROOF. © 1975.

ILLUSTRATION BY GAIL KAPLAN

When is a full-size Chev



When you're six people and could use the room. Sure, the six of you would be almost as comfortable divided into two smaller cars. But that's not economy. Or you'd *all* fit into some compact model. But that's not comfort.

Slip into a full-size 1976 Chevrolet sedan (either Impala or our luxurious Caprice). Now, *that's* room. According to published dimensions, our full-size 4-door sedans are roomier than those from our nearest sales competitor—more shoulder and leg room in both the front and rear seats.

While we're talking room, note that the trunk of a '76 Impala or Caprice sedan will hold almost 19 cubic feet of luggage (more than shown here).



'76 Caprice interior with available 50/50 split front seat.



When you hook up your trailer and know you Chevrolet was built to tow it.

The full-size '76 Chevrolet with proper trailering equipment can pull loads up to 6,000 pounds. That's about a ton more than the recommended limit for any American-made compact.



1976 Caprice Classic Sport Sedan.



Is a Chevrolet an economy car?

When you look at resale. On a nationwide average, 3- and 4-year-old Impala and Caprice coupes and sedans have a higher resale value than the most similar models from our nearest sales competitor.

In fact, a 4-year-old Caprice sedan has a higher resale value than most other full-size sedans.

**21% better mileage
EPA
city test**

When you consider Impala's improvement in city mileage over 1974.

According to city mileage tests conducted by the EPA on 1974 and 1976 models, the Impala Custom Coupe with standard 350-2 V8 power team shows a 21% improvement in fuel economy. (Highway mileage tests were not run by the EPA in 1974.)

EPA Buyer's Guide ratings for all 1976 Caprice and Impala sedans and coupes with standard 350-2 V8 are 21 mpg City, 18 Highway.

Remember: EPA mileage ratings are estimates. The actual mileage you get will vary depending on the type of driving you do, your driving habits, your car's condition and available equipment. For California EPA ratings and power team combinations, see your Chevrolet dealer.

When you could save over \$530 in recommended maintenance costs on the '76 model, compared to the '74.

In 50,000 miles of driving, if you follow the Owner's Manual for recommended service, a full-size 1976 Chevrolet with a standard 350 V8 engine using unleaded fuel could save you over \$530 in maintenance costs, compared to the '74 model using leaded fuel.

While parts and labor costs will vary throughout the country, we've used current list prices for parts and lubricants, and a figure of \$12 an hour for labor.



When you realize a full-size Chevrolet is probably priced lower than the full-size you had in mind.

Comparing Manufacturers' Suggested Retail Prices for base models, you'll find full-size Chevrolets are priced lower than *all* full-size cars from our nearest six sales competitors. For that matter, they're not priced much higher than similarly equipped smaller cars.

The full-size 1976 Impala or Caprice: It could be your next economy car.



Chevrolet

South Carolina offers you the vacation with all the extras. At no extra cost.

We'd like to help you spend less money for your vacation this year. By getting more vacation for your money.

So we've put together the South Carolina Trip Kit. It's full of facts about all the things South Carolina has to offer. Like beaches, mountains, hunting, fishing, camping, golf, tennis, lakes, boating, gardens and historical cities. And you'll be surprised how many of our attractions are free.

Even the South Carolina Trip Kit is free. Just send us the coupon and find out how you can have all the South Carolina extras. At no extra cost.



Name _____ Address _____
City _____ State _____ Zip _____

Free South Carolina Trip Kit

Mail to South Carolina Division of Tourism, Room 207, Box 78, Columbia, South Carolina 29202

FINISH CORNERS • CUT MOULDING WITH ANY ELECTRIC DRILL NO \$50 ROUTER OR \$6 BITS NEEDED!

You don't have to buy an expensive Router to finish corners, moulding & trim. "ARCO" Cutters do the work at a fraction of the cost. Simply slip the Cutter's 1/4" shank in any drill and it's ready to produce! Dual Guides assure accurate cuts along entire length & width of workpiece. Cuts wood, plastics, soft metals. Quality-made in U.S.A. of hardened steel. These Cutters also fit & work with all Electric Routers.

No. 6—3 PIECE CUTTER SET



\$5⁸⁵

FANCY COVE-CUTTER

CUTS 1/4" CONTOURS



ROMAN
OGEE-CUTTER

RABBIT-
CUTTER

MAIL THIS COUPON TODAY!

ARCO PRODUCTS CORP., Dept. PM-2
110 West Sheffield Ave., Englewood, N.J. 07631

Ship at once on your 30-day Money Back Guarantee:

- ☐ No. 3, 3-PIECE CUTTER SET \$6.25
☐ No. 6, 3-PIECE CUTTER SET 5.85
☐ No. 7, 3-PIECE CUTTER SET 5.85
☐ No. 6703, ALL OF ABOVE 9 CUTTERS 14.95

☐ I enclose Check, M.O.—SHIP POSTPAID.
(No C.O.D.'s)

Name _____

Address _____

City _____ State _____ Zip _____

No. 3—3 PIECE CUTTER SET

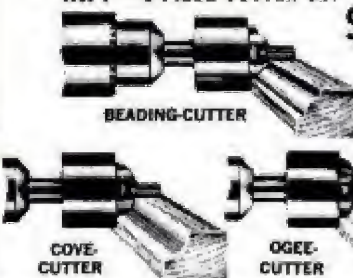


\$6²⁵

ADJUSTABLE
BEVEL-CUTTER
cuts 45° bevels from
1/32" to 5/16" wide

2 RADIUS CUTTERS
for 1/8" and 1/4"
ROUND CORNERS

No. 7—3 PIECE CUTTER SET



\$5⁸⁵

CUTS 1/4" CONTOURS

COVE-
CUTTER

OGEE-
CUTTER

SPECIAL SAVING!

Order all of above 3 Sets at
our Special Money-Saving
Price, No. 6703, total of 9
Cutters, only.....

\$14⁹⁵

These & over 300 other ARCO Tools available at Hardware Depts. everywhere, or order direct on 30-day Money Back Guarantee.

HINTS

FROM READERS

Weatherproof cover



Poke shackle and hasp's eye through holes in the side and bottom of a plastic bag and you'll have a waterproof cover for an outside padlock that let's you unlock the lock from the open end.—Walter E. Burton

Channel your router



When using a portable router to plow a dado across a wide board, guide router with a straightedge clamped at each side of its base. The cut will be straight and true its full length.

—Harvey Plunksetter

Blind as a rabbit



Quickest and simplest way to form a rabbet is to run the cut completely through from edge to edge, then glue small blocks back into the cut at each end. This way there's no need for a chisel.—Rosario Capotosto

Who builds the best test & service equipment, automotive tune-up gear, color TV's, digital clocks & radios available?



YOU DO

...when you build any of the more than 400 high-performance Heathkit products; every one of them backed by our famous "we won't let you fail" policy. And kit-building lets you put your own hand-crafted care, and only the highest quality components, into every kit you assemble. Building instructions are simple to follow...easy to understand...even if you've never built a kit before. And a special section in the assembly manual even shows you how to service what you build.

FREE

96 big colorful pages of exciting electronic kits

- Stereo & 4-Channel Components
- Color TV's • Digital Time, Date & Weather Monitors • Calculators • Marine & Fishing Gear • Shortwave & Amateur Radio • Test Equipment

Mail this coupon for your
FREE HEATHKIT CATALOG

Heath Company, Dept. 17-14, Benton Harbor, Michigan 49022

SEE THE ENTIRE SUPER-VALUE LINE OF HEATHKIT PRODUCTS IN THIS COLORFUL NEW CATALOG. SEND FOR YOUR FREE COPY TODAY.

Heath Company Dept. 17-14 Benton Harbor, Michigan 49022		HEATH Schlumberger
<input type="checkbox"/> Please send my free Heathkit Catalog		
Name _____		
Address _____		
City _____	State _____	Zip _____
CL-585		

CAR CLINIC

BY MORT SCHULTZ



Holy Holley

I own a 1971 Chrysler Newport which has a 360-cu.-in. V8 engine. Although the car is in excellent condition, I'm prompted to trade it because of an irritating problem, which seems minor, that I can't get repaired. When the engine is warmed up, it won't start after being turned off 10 minutes or so, although the starter cranks normally. As long as the engine is cool, it starts perfectly. I have had the carburetor cleaned and rebuilt twice at a cost of over \$100. I would buy a new carburetor, but I don't want to replace it with another Holley, because I fear the same trouble. Can you help me?—Andrew A. Zadany, Corning, N. Y.

I'd say your carburetor has a grand case of percolation fever. Heat concentrated on the carburetor is causing gasoline in the bowl to percolate when the engine is turned off. The gasoline boils over into the engine, causing an overly rich fuel mixture when you try to start the car. It's as if the engine has been flooded, and the same starting problems associated with flooding are present.

Although you don't say so, I guess you have a Holley 2210 two-barrel unit in the car since this is standard for the 360-cu.-in. engine. A reliable carburetor, it shouldn't be condemned, because certain adjustments which should be made during overhaul to avert percolation may not have been made. One is the float setting, which any competent mechanic doing an overhaul knows about. The other adjustment isn't as common and may be overlooked. It's the bowl vent-valve clearance adjustment.

This valve in the Holley 2210 permits pressure that could cause percolation to relieve itself. It's a positive means of preventing percolation, but it operates correctly only if adjusted to specification.

To check the bowl vent-valve clearance, start the engine and see that it's running at correct curb idle speed (700 rpm). It should be possible to insert a 0.015-in. feeler gauge between the bowl vent-valve plunger stem and operating rod. If adjustment is necessary, bend the tang on the pump lever until you get the correct clearance.

Finally, I explained your problem to the technical services department at Chrysler and was urged to inform you to have service bulletin 14-17-74 applied. This deals with stumble during light acceleration and/or choke sticking caused by carburetor air horn warpage. According to the company, air horn warpage could affect your car's performance.

Coast to coast

Whenever I come to a hill with my standard shift 1973 Plymouth Duster, I shift to neutral gear and coast. I cover a lot of distance and I'm saving gas, but am I causing any damage?—P. L. Sarma, Edinboro, Pa.

The money you're saving, plus more, will be needed to pay for the brake job you'll soon need. The lost braking effect provided by the engine during a downhill run has to be taken up by the brakes, with greater wear and tear on linings. Nor is coasting a particularly safe driving procedure since it leaves you virtually at the mercy of your brake system and a strong foot. What if your brakes start overheating and fading? I'd forget it.

Leak no more

General Motors has informed me that "the condition you are referring to is an oil weep, rather than an oil leak. This oil weep is a normal condition of an engine and would not warrant further repair." My car is still within warranty, having less than 7000 miles. Do you consider any form of oil seepage, from an engine this new with this low mileage "normal?"—J. P. Ahlswede, Milwaukee, Wis.

I sure do. There's a vast difference between a leak and seep (or weep). A leak is a defect.

A seep is normal, characterized by a quantity of liquid that has oozed through fine pores or small openings. You won't find a puddle on the ground beneath the car. Nor will the loss show up as a drop in oil level on a dipstick.

A leak is characterized by dripping, like water dripping from a defective faucet. If you let the car sit still awhile, a puddle will form on the ground, and the loss will show up on the dipstick as a definite drop in oil level.

Thinking positively

My 1975 Oldsmobile Starfire has an out-of-balance bounce above 50 mph despite dealer and tire-store efforts. I've now been informed this is an inherent problem I'll have to live with. Not having this profound advice prior to purchase, I guess I'm stuck—Don Johnson, Minneapolis, Minn.

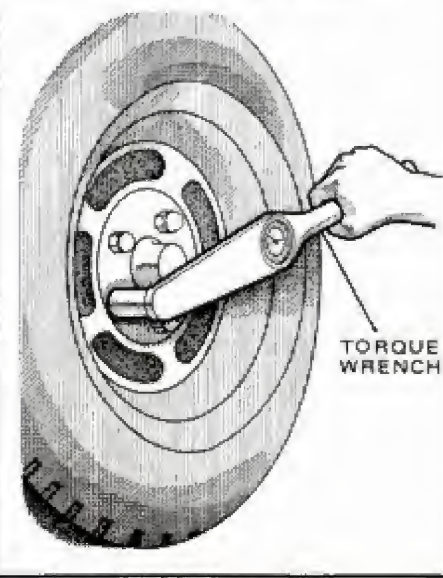
Maybe so, but you shouldn't be pessimistic until the following have been tried.

1. Increase tire air pressure to 30 pounds.

2. Readjust tie-in to zero (disre-
(Please turn to page 54)

Give yourself a brake

There's a right way and a wrong way to tighten wheels after changing a flat, rotating tires or putting on snows. The wrong way is with an impact wrench, which will over-torque the wheel and distort disc brake rotators and drum brake drums. Distorted braking parts cause pulsation in the pedal and greatly reduce braking effectiveness. Don't use a power wrench and, above all, don't let anyone else. Speak up, and don't listen to any stories that a power wrench won't hurt anything. The right way to install wheels is with a torque wrench that permits tightening wheel nuts exactly to the specification provided in the manufacturer's service manual.



**“Why Viceroy? Because I’d never
smoke a boring cigarette.”**



Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

16 mg. "tar," 1.0 mg. nicotine,
av. per cigarette. FTC Report Nov. '75



Enjoy Viceroy flavor—now in a bold new pack.

Viceroy. Where excitement is now a taste.



Model 120-K
Solid 3/4" Cherry
74" x 16 3/4" x 10"



EMPEROR®
CLOCK COMPANY

WORLD'S LARGEST MANUFACTURER
OF GRANDFATHER CLOCKS

Announcing Emperor's

SUPER SALE!

AMAZINGLY LOW PRICE

on the classic Model 120-K

DO-IT-YOURSELF CASE KIT

SOLID 3/4" CHERRY

89.50

**FACTORY
DIRECT**

WHEN PURCHASED WITH MOVEMENT
OR, CASE KIT ALONE \$99.50 Reg. \$129.50

Assemble your own clock, complete with Westminster chiming movement, Tempus Fugit Dial, for just \$204.00; complete with Moving Moon Dial, Westminster chiming movement (as shown), for just \$219.00. Compare your finished clock with those retailing up to \$750.00.

VOLUME PURCHASE! GREAT SAVINGS!

Emperor Clock Company, world's largest manufacturer of grandfather clock case kits, has always been able to give you unbeatable low prices because of our great buying power. A short while ago, Emperor made a fantastic, high volume purchase of native Pennsylvania cherry hardwood... before the recent price increases in cherry. Now, Emperor passes its volume purchase savings on to you with this offer of beautiful Model 120-K cherry at an amazingly low price. Take advantage of it. Do it now while the supply lasts.

EASY TO DO! ALL MITERS PRE-CUT!

From a small beginning six years ago, Emperor has grown to become the world's largest manufacturer of grandfather clock case kits by supplying the do-it-yourselfer with easy to assemble precision cut kits. Now, Emperor makes it even easier by cutting all miters on newly acquired production equipment. There's no guesswork involved with the Emperor case kit. All kit pieces have been accurately crafted, pre-cut and factory sanded on both sides for easy assembly. Divided swan neck and finial, waist and dial face door, dial frame and sculptured base front pre-assembled. Emperor uses only the finest Pennsylvania cherry, a hard, strong and close grain wood, so the clock you assemble and finish will give you a great feeling of proud accomplishment. Complete hardware and assembly instructions. Each piece may be reordered separately. No wood-working experience necessary.

- Four full-turned hood columns
- Divided swan neck and decorative finial
- Full-length waist door
- Curved arch on waist and dial face doors
- Decorator sculptured base
- Floor levelers

MONEY BACK GUARANTEE

If for any reason you are not completely satisfied, return in original carton within thirty days for prompt refund... no questions, no excuses.

SUPER SALE OFFER EXPIRES MARCH 31, 1976

© 1975 EMPEROR CLOCK COMPANY

Diagram illustrating the exploded view of a wardrobe assembly, showing various components labeled:

- PREASSEMBLED CROWN
- READY-FORMED SPINDLES
- HOOD PARTS
- PREASSEMBLED
- WAIST PARTS
- BASE PARTS
- PREASSEMBLED DOOR
- FOOT MOLDS

Emperor's 100-M grandfather clock movement is produced in West Germany by world-famous clocksmiths, now in their third generation of manufacturing the world's finest movements. These movements are known and valued throughout the world for their lasting accuracy and dependability.

Embossed overlays surround the solid brass dial. The face has a high, permanent polish and serpentine hands. You can select from two dial versions. One has the words "Tempus Fugit" (Time Flies) inscribed in black enamel on a shaped world in the arch above the dial face. The other has the classic Moving Moon and a lunar calendar.

The completely weight-driven movement strikes the famous, melodious Westminster chimes on four musically-tuned rods: four notes on the quarter-hour, eight on the half-hour, twelve on the three-quarter-hour and sixteen on the hour. The hour is struck on four additional tuned rods. The Emperor movement includes weights, solid brass weight shells, brass bob, pendulum and chimes. All plates are solid brass and pinions hardened steel. Installation and adjustment of the movement is simple, following the step-by-step instructions.

MOVEMENT CARRIES A ONE YEAR WARRANTY

(A) 100-M Movement with
Tempus Fugit Dial \$114.50

(B) 100-M Movement with
Moving Moon Dial \$129.50

SUPER SALE OFFER EXPIRES MARCH 31, 1976

ALL ORDERS SHIPPED 2 TO 3 WEEKS • SHIPPING CHARGES COLLECT

EMPEROR CLOCK COMPANY, Dept. 39-G

Emperor Industrial Park, Fairhope, Alabama 36532

Please Check: New Customer

Previous Customer

QUANTITY	DESCRIPTION	WEIGHT	REG. PRICE	SALE	EXTENSION
	Model 120-K Solid 3/4" Cherry Do-It-Yourself Case Kit with purchase of either Movement (Priced Separately) below	53	\$129.50	\$89.50	
	Model 120-K Solid 3/4" Cherry Do-It-Yourself Case Kit without purchase of Movement, (Priced Separately) below	53	\$129.50	\$99.50	
	Model 120-A Solid 3/4" Cherry Completely Finished Clock with Tempus Fugit Dial, Westminster Chimes	95	\$379.50		
	Model 120-A Solid 3/4" Cherry Completely Finished Clock with Moving Moon Dial, Westminster Chimes	95	\$394.50		
	Model 100-M Movement Complete With Tempus Fugit Dial, Westminster Chimes for Model 120-K	33	\$114.50		
	Model 100-M Movement Complete with Moving Moon Dial, Westminster Chimes for Model 120-K	33	\$129.50		

We accept personal checks

ENCLOSED \$_____ () CHECK () MONEY ORDER

CHARGE TO MY () MASTER CHARGE () BANKAMERICARD

ACCOUNT
NUMBER

[illegible]

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

TOTAL \$ _____

Alabama residents only.

add 4% sales tax \$

GRAND TOTAL \$



Please send FREE color brochure on complete Emperor line ☐

CAR CLINIC

(Continued from page 50)

gard the "book" specification of 1/8-3/8 in.).

3. Balance wheels and tire assemblies with assemblies mounted on the car.

4. Make sure that your high-speed bounce isn't really a vibration caused at and around 50 mph by two other problems bugging the Starfire: A. the exhaust system grounding itself against the underbody (have your mechanic see the *Olds Service Guild*, Aug. 1975, page 87); B. engine vibration caused by high-speed miss or broken power-steering support bracket (see the same reference, page 82).

5. Check tires and wheels for an out-of-round condition and replace faulty components.

Faith and hope

I have this shimmy problem with my 1973 Capri when I apply the brakes (discs in front, drums in rear). I was told that wheel bearings may need adjustment, which was done with no results. Now I'm told rotors on the front wheels are probably out-of-round and need turning. Can I trust this or am I being led to an expensive repair?—Richard Pra-

del, Greencastle, Pa.

Trust. Whoever is advising you sounds good. When the bearings were adjusted, the easiest and least expensive repair was made first. The trouble no doubt lies with the rotors. By turning the rotors in an effort to solve the problem, rather than replacing them (which, in the end, may have to be done), your mechanic is

trying to save you money. Listen to him.

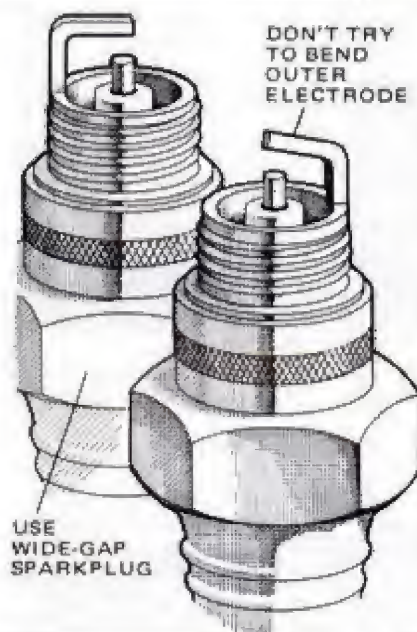
But before turning rotors, try something else. It's been found a brake-shudder condition in 1971-74 Capris could be caused by materials in older brake pads. Heat causes pads to transfer pad material to rotors. The uneven buildup gives the same effect as out-of-round rotors.



PM CAR CARE

Bad arithmetic

If you own a 1974, 1975 or 1976 domestic model, the engine probably uses wide-gap sparkplugs that keep emission levels within spec. When wide-gap plugs are specified for an engine, you must use wide-gap replacements. Doing otherwise will create an engine misfiring condition and result in poor performance. "Doing otherwise" means taking a conventional sparkplug usually gapped, at most, to .035 inch and trying to convert it to the wide gap of .044 inch, .060 inch, .080 inch or whatever the manufacturer may specify by bending the ground electrode. The electrode attains an abnormal angle that causes rapid center electrode wear.

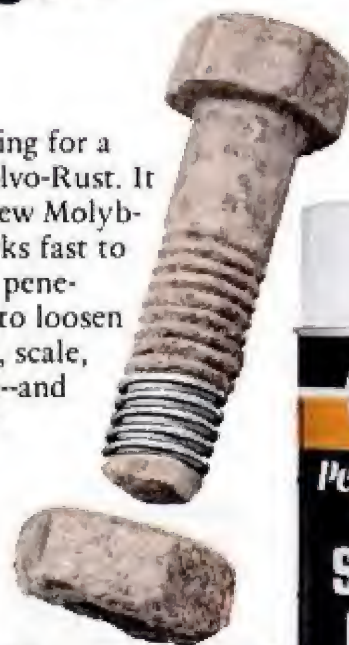


We don't deal in broken promises



When a mechanic comes looking for a heavy-duty rust-buster, he uses Solvo-Rust. It means business. Solvo-Rust's new Molybdenum Disulfide formula works fast to free rust. Solvo-Rust actually penetrates the pores of metal parts to loosen up deposits of rust, corrosion, scale, paint, varnish, carbon and gum--and

to keep those parts loosened up a long time. Stock Solvo-Rust in five and fourteen ounce aerosols and the handy one-pint spout top can. Solvo-Rust. The heavy-duty rust-buster from Permatex. It means business.



Permatex®
MADE FOR THE PROFESSIONAL

Permatex
NASCAR Race Schedule
PERMATEX "200"
Riverside, CA, Jan. 17, 1976
PERMATEX "200"
Daytona Beach, FL
Feb. 13, 1976
PERMATEX "300"
Daytona Beach, FL, Feb. 14, 1976

PERMATEX COMPANY, INC.
P.O. Box 1350, West Palm Beach, Florida 33402
Telephone 305/686-0880 • Telex 513-417



**LAST NIGHT BODEN'S YARD
WENT DOWN THE DRAIN.
SO DID \$550.**

Don't you wait for septic tank or cesspool trouble to start. Use Rid-X® now. 50¢ worth once a month can save you hundreds of dollars.

The Bodens are real people. Their cesspool really needed work. This picture was taken as it was being done. The job really cost \$550.

It could happen to you! For years the Bodens were like most home owners. Their sewage system worked fine, so they ignored it. Meanwhile, trouble built up underneath their feet until one day, it surfaced. They learned the hard way—when you see septic tank or cesspool trouble, it may be too late.

That's why you should start using Rid-X now, before trouble starts. Today's modern detergents, bleaches and lyes can destroy the active bacteria your sewage system needs to work efficiently. Rid-X is a beneficial bacteria additive made to help reactivate that essential bacteria action; to help liquefy waste matter, oils and fats. Rid-X works to keep septic tanks and cesspools trouble-free.

Don't confuse Rid-X with liquid and caustic products made to simply unclog drains. Rid-X is specially made to work inside septic tanks and cesspools. Just 50¢ worth, flushed down the toilet bowl once a month, can save you hundreds of dollars! Buy Rid-X today, at your hardware or food store.

SPECIAL COUPON OFFER.

Get a discount coupon worth 50¢ towards your purchase of Rid-X (it's like getting the first month's supply free)—plus a free 16-page booklet on septic tank-cesspool maintenance. Send name and address to Rid-X, P.O. Box 225, White Plains, N.Y. 10606.



Ask your mechanic to sand rotors thoroughly, rather than turn them to overcome obvious high spots. Then have him install a new set of transfer-resistant brake pads (part No. D 4 R Y-2001-A). These pads have a thin abrasive coating that further cleans rotors of materials transferred from old pads to rotors. The shudder may not disappear completely for up to 1000 miles. That depends on how much you use your brakes. The more you use them, the more abrasive-coated pads will be able to clean away old material, and the quicker the shudder will vanish.

Not on the level

My 1970 Buick Estate station wagon is equipped with an automatic-level control system. I pull a 19-foot Aristocrat trailer using an Eaz-Lift hitch. Recently I added a 25-gallon gas tank in the well of my wagon which, when full, adds about 200 pounds. I also carry a cartop 12-foot, 140-pound boat. With this added weight, the automatic-level control system isn't strong enough to lift car and trailer to level position, and sway bars are straining more than usual. My Buick dealer is uncertain what can be done. Can you help?—Don Diehm, Watsonville, Calif.

You've tipped the balance, and a need for overload springs in the rear is apparent. The automatic-level control system may have to be disconnected and air shocks removed. It depends on how you approach the problem. There are two ways:

1. Get rid of the automatic-level control system and install rear load carriers. This is a combination shock and overload-spring unit that, when coupled with present springs (if they're in good shape) will give ample support.

2. Retain the automatic-level control system and add leaf-type overload springs. This will give you more than enough strength to support the added 350 pounds.

You have several factors to consider before deciding—including the price and ease of removing the overload springs when you're not pulling a trailer if you want the most comfortable ride. I think the guy best qualified to discuss the pros and cons is a reliable trailer dealer.

SERVICE TIPS

■ Oldsmobile suggests that you check to make certain you get the right replacement when the time comes to get a new battery in your 1975 Starfire. A mistake was made on some original battery labels. The recommendation says to get a Delco

Y-87 or R-87 replacement, but if you tried to put one in your car you would find that there isn't enough clearance between caps and hood. The right replacement is a Y-87PT or R-87PT.

■ Ford Motor Co. has traced an engine overheating problem to installation of the wrong radiator. The trouble applies to 1974 Torinos and Montegos with a 351 W-2V engine, 3.25 rear axle and no air-conditioner that were built before June 19, 1974. The problem may not have shown up yet, but it could when you run the car at high speeds in high temperature climates or when you put the car under a really heavy load, such as pulling a trailer.

The erroneous radiator can be identified by looking at the upper left section of the radiator frame between the tanks. The wrong unit has part No. D40F-8005-CA stamped there. Have your Ford or Mercury dealer replace the radiator with the higher-capacity model (part No. D3V4-8005-A). This shouldn't cost you a cent. If you get any flak, be sure to refer the dealer to service bulletin 88, article 1105, page 29. ★★

GOT A PROBLEM WITH YOUR CAR?

Just ask Mort about it. Send your question to the Car Clinic, Popular Mechanics, 224 West 57th St., New York, N.Y. 10019. While letters cannot be answered individually, problems that are of general interest will be published in the column.

The whole neighborhood wondered what Frank Mallon was up to in his workshop.

Word had it he was up to something mighty peculiar. And when he didn't show up for bowling practice one Wednesday night, the Wabash Cannonballs (that was the name of his neighborhood team) began to wonder, too.

So it was that a bunch of the boys decided to pay their "star" a visit, and talk him out of his workshop and back into action.

It didn't happen that way, though.

Matter of fact, it was Frank Mallon who talked the Wabash Cannonballs out of their bowling night and down into his workshop. What was it... what could be exciting enough to keep a bunch of ten-pin tigers from their favorite pastime? One of the most fascinating learn-at-home programs in the world, that's what!

Actually build and experiment with the new generation color TV in Bell & Howell Schools' fascinating learn-at-home program. It will help you develop new occupational skills as an electronics troubleshooter.

You'll set up your own electronics laboratory to learn first-hand, the technology behind such innovations as digital-display wrist-watches and tiny pocket calculators.

In fact, as part of the program, you'll actually build and experiment with a 25" diagonal color TV incorporating digital features.

But most important of all will be the new skills you'll develop all along the way... the kind of skills that could lead you in exciting new directions. While we cannot offer assurance of income opportunities, once you've completed the program you could use your training:

1. To seek out a job in the electronics industry.
2. To upgrade your current job.
3. As a foundation for advanced programs in electronics.

Go exploring at home, in your spare time. No traveling to class. No lectures. No one looking over your shoulder.

Bell & Howell Schools wants to introduce you to the modern way to learn. It means you'll be able to develop new skills in your own home—on whatever days and hours you choose. So you don't have to give up your present job or paycheck just because you want to learn new occupational skills.

What's more, we believe that when you're exploring a field as fascinating as electronics, reading about it is just not enough.

That's why you'll get lots of "hands on" experience with some of the most impressive electronic training tools you've ever seen.

No electronics background necessary.

That's one of the advantages of this program. We start you off with the basics and help you work your way up, one step at a time. In fact, with your first lesson you receive a Lab Starter Kit to give you immediate working experience on equipment.

You build and perform exciting experiments with Bell & Howell's Electro-Lab®. An exclusive electronics training system.

First comes the design console. After you assemble it, you'll be able to set up and examine circuits without soldering.

Next, you'll put together a digital multimeter. This instrument measures voltage, current and resistance, and displays its findings in big, clear numbers like on a digital clock.

Then comes the solid-state "triggered sweep" oscilloscope. An instrument similar in principle to the kind used in hospital operating rooms to monitor heartbeats. You'll use it to analyze the "heartbeats" of tiny integrated circuits. The "triggered sweep" feature locks in signals for easier observation.

You'll build and work with Bell & Howell's new generation color TV, investigating digital features you've probably never seen before!

This 25" diagonal color TV has digital features that are likely to appear on all TV's of the future.

As you build it, you'll probe into the technology behind all-electronic tuning. And into the digital circuitry of channel numbers that appear right on the screen! You'll also build the remarkable on-the-screen digital clock that will flash the time in hours, minutes and seconds.

And you'll program a special automatic channel selector to skip over "dead" channels and go directly to the channels of your choice.

You'll also gain a better understanding of the exceptional clarity of the Black Matrix picture tube, as well as a working knowledge of "state-of-the-art" integrated circuitry and the 100% solid-state chassis.

After building and experimenting with this TV, you'll be equipped with the kinds of skills that could put you ahead of the field in electronics know-how.

We try to give more personal attention than other learn-at-home programs.

1. Toll-free phone-in assistance. Should you ever run into a rough spot, we'll be there to help. While many schools make you mail in your questions, we have a toll-free line for questions that can't wait.

2. In-person "help sessions". These are held in 50 major cities at various times throughout the year, where you can talk shop with your instructors and fellow students.

So take a tip from Frank Mallon. Find out more about the first learn-at-home program that could stir up your neighborhood!

Mail this postage-paid card today for more details!

Taken for vocational purposes, this program is approved by the state approval agency for Veterans' Benefits.

If card has been removed, write:

An Electronics Home Study School
DeVRY INSTITUTE OF TECHNOLOGY

ONE OF THE



BELL & HOWELL SCHOOLS

4141 Belmont Chicago, Illinois 60641

"Electro-Lab" is a registered trademark of the Bell & Howell Company.

696RS



On-screen digital clock



Channel numbers that flash on the screen



Automatic pre-set channel selector

APPLIANCE CLINIC

BY PAUL MANN



Mixing apples and oranges

We're having a problem with some kind of sediment clogging the small screen of our kitchen faucet. Every few weeks the screen becomes so badly clogged that water doesn't come out in a steady stream; rather, there is little pressure and water squirts in all directions. I suspect the trouble may be with our Frigidaire dishwasher, which empties into the garbage disposal. Am I right?—Sonia Kurtyka, Redford Township, Mich.

No, you're wrong. The dishwasher in no way can clog the sediment screen attached to a kitchen faucet. I suggest you call your water company if your water is supplied by the city, or have water tested if it's a private supply. The problem, if there is one, is confined to the water supply, probably with hardness, but I can't say for sure. I should point out that the purpose of the screen is to trap sediment, and that it should be cleaned out periodically anyway.

Strange happenings

My General Electric food disposal unit is the type that's turned on and off by twisting the cover. Of late, the unit stays on after I twist the cap to "off." It's weird. Any suggestions?—Martin Epstein, Pearl River, N.Y.

Yep. The trouble is caused either by a sticking switch plunger or by a defective on-off switch. The on-off switch is mounted on the side of the hopper, and the switch plunger protrudes through the hopper wall and plastic sleeve. The cap activates the plunger, which operates the switch.

Okay, you should start by testing the switch plunger. Turn off the power supply to the unit and work the plunger with your finger, if you can.

If action is sticking and not smooth, apply a drop or two of lightweight household oil to the plunger stem and work the oil in by moving the plunger. See if this clears up the trouble. If not, remove switch from the hopper.

If the plunger seems to work okay, test the switch. You can use an ohmmeter. Turn off the power supply and remove the inspection plate on the bottom of the disposer. Attach the leads of the ohmmeter to points A and B of the hopper switch as pointed out in the wiring diagram below. One ohmmeter lead is attached to the black lead A and the other lead is attached to the protector B. The sink cover should not be in position—that is, the on-off switch should be in the "off" position. The ohmmeter should show infinite resistance. If it doesn't, the switch should be replaced.

Removing the switch for replacement or to get at the plunger to try and free it isn't particularly difficult. The switch itself is held in place in the hopper by a single screw (see the illustration below). Remove the screw and carefully take the switch from the housing. Try not to damage the gasket; if destroyed, replace it. The

gasket acts as a seal to keep water out of the switch and to seal the plunger clearance hole in the hopper. See that it's repositioned properly to avoid future switch problems.

Now that the switch is out of the housing, try to free the plunger, if that's your problem, by cleaning dirt from around the plunger and lubing it. If the plunger is okay, and the switch is defective, you have to disconnect the cable leading from the switch to the stator housing. The switch and cable is a one-piece unit that will have to be replaced.

Grasping for a gasket

I need a gasket for the freezer door of my Hotpoint refrigerator-freezer (model No. 144EW114). I have been told there is no gasket to be had. Do I throw the appliance away?—H. E. Lefebvre, Vineland, N.J.

You've been given some wrong information. The part number for the gasket you need is WR 24 X 5028, and it's current, which means that the part is available from your local GE Regional Parts Center at Hickory and Castpa Place in Vineland (phone 696-1506). ★★★

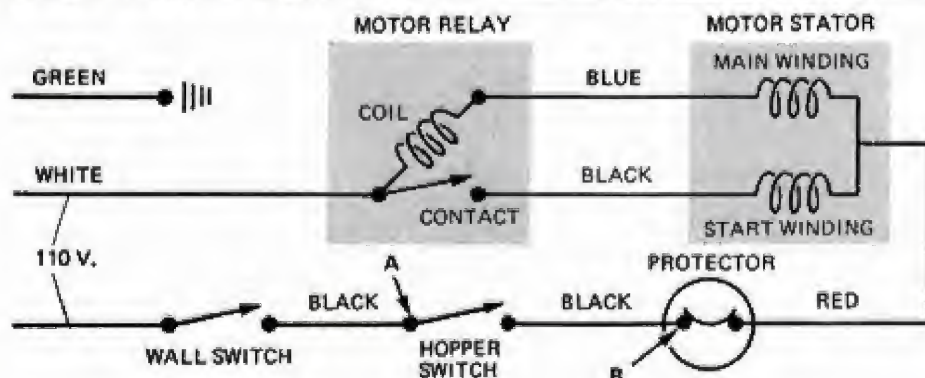
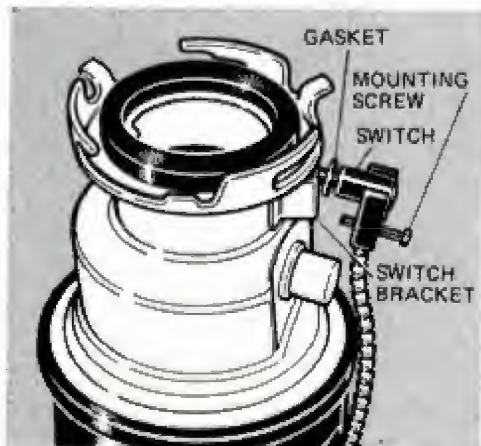
Junk or keep?

Some readers who are not do-it-yourselfers have asked me to tell them at what point they should get rid of an appliance that isn't working rather than having it repaired.

When the repair cost nears or exceeds that of a new appliance, buy a new one. The cost of repair is not always less.

I had a hand-held food mixer go bad not long ago. It needed only new brushes, a simple repair, but I figured it would be a good time to learn how much a repair shop would want. Its cost was \$8—\$6 for service (this shop's flat minimum rate) just for accepting the appliance and \$2 for parts. Heck, I can buy a new hand-held food mixer in a discount store for \$8. ★★★

If you have a question about any appliance, send it to Appliance Clinic, Popular Mechanics, 224 West 57th St., New York, N. Y. 10019. Sorry, but letters cannot be answered individually. Problems of wide interest will be discussed in this column.





"Unbelievable."

The Aspen wagon has everything going for it.

Even if you never wanted a wagon...you'll want the Aspen wagon. That's how perfect it is. Its size alone will make you want to drive it. And once you do, the ride will make you want it even more. So before everybody gets there first, you ought to go down and take a look at the small wagon that'll probably become the biggest hit in America.

The Aspen wagon has a special size all its own.

Smaller than the big and bigger than the small, the Aspen carries only 100 pounds less than a full-sized wagon and over 200 pounds more than a subcompact wagon. So you can move into a smaller wagon for economy without having to get tiny about it.

The Aspen wagon has a ride that rivals that of a full-sized car.

The unique Isolated Transverse Suspension is rubber isolated to reduce noise and vibration transmitted to the passenger compartment. This gives Aspen an extremely comfortable ride. And for a small wagon...that's unbelievable.

The Aspen wagon achieved EPA estimated highway mileage of up to 30 MPG.

According to EPA estimated mileage results, the Aspen wagon got 30 MPG on the highway and 18 city. The coupe and sedan got 27 MPG highway and 18 city. All were equipped with a 225 Six and manual transmission. (Your actual mileage depends on driving habits, condition of your car, and options. In California, see your Dealer for mileage results.)

The Aspen wagon offers the important convenience features of a luxury car.

A long list of options includes everything from power seats and windows to electric door locks and automatic speed control.

Here's "The Clincher:"

"For the first 12 months of use, any Chrysler Corporation Dealer will fix, without charge for parts or labor, any part of our 1976 passenger cars we supply (except tires) which proves defective in normal use, regardless of mileage." The owner is responsible for maintenance service such as changing filters and wiper blades.



ASPEN

The new Dodge Aspen. For a small wagon at a small price, it's unbelievable.

START YOUR OWN MONEY-MAKING BUSINESS IN...



CUSTOM PICTURE FRAMING

Cash in on the huge demand for custom framing...an industry where men and women are earning \$10 to \$15 an hour...and that's just for labor. Prints, mats, hangers and lighting accessories add even more to your profits!

As a qualified custom framer, people will seek you out and pay you well to frame valued paintings, prints, photos, certificates, diplomas, needlework...the list is nearly endless.

NO EXPERIENCE NEEDED.

You don't have to be a "born craftsman" or need prior experience. With Belsaw's fully accredited training, you can master this high-profit craft right at home in your spare time.

Easy to understand lessons are fully illustrated—so clear you can't go wrong. You receive all the special tools and equipment needed—yours to keep! We guide you every step of the way with tested and proven information on how to get business, what to charge, how to get free advertising, where to get wholesale supplies...all the "tricks of the trade"...all the inside facts you need to assure success right from the start!

SEND FOR FREE FACTS

Just fill in and mail coupon below for free information and details by First Class mail. No Obligation. No salesman will ever call!

BELSAW INSTITUTE
806F FIELD BUILDING
KANSAS CITY, MISSOURI 64111

PROFITS
IN

CUSTOM
PICTURE
FRAMING

BELSAW INSTITUTE
806F FIELD BUILDING
KANSAS CITY, MISSOURI 64111

☐ **YES**, Send me the FREE booklet that gives full details about starting my own business in Custom Picture Framing. I understand there is no obligation and no salesman will call.

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

Silent film editors that convert to sound



Adaptable editors for sound or silent films (rear to front): Bolex 180 Duo, Elmo 912, Goko G-1001. All share editing accessories shown in front and, in more detail, below.



Sound reader attachment is battery powered, has volume control and earphone.



Frame counter lets you time scenes and find frames for easy reference later.



Film cleaner helps protect edited film against dirt which can cause scratches.

Sound films are easy to shoot in the new single-system cameras that record sound on a magnetic stripe along the film. But editing those films is hard unless you have an editor that lets you hear as well as see what's on them.

These three silent editors adapt in seconds to do just that: A simple attachment (with a "tape head" to read the sound track and its own transistor earphone amplifier) slips into the accessory shoes of the latest Bolex, Goko and Elmo editors. The same shoes also take frame counter and film cleaner attachments, useful for silent editing, too.

All three editors obviously come from the same factory, but there are differences: The Bolex has the biggest screen (but takes up the most storage space), the Goko has the easiest framing adjustment, but only takes Super-8 or Single-8 film (the others take regular 8-mm, too). All three had good rewinds geared to let you wind smoothly and rewind fast, with reels up to 800 feet long. I didn't like the frame-marking punch, though: As with most editors, it punches a hole right through a scene. That makes the punched frame easy to spot, but ruins it if you should change your mind and want to use that frame. I prefer editors that notch the edge of the film, but that's probably impractical for striped sound films.—*Ivan Berger*



WHAT CAN MAKE THE DIFFERENCE BETWEEN A SUCCESSFUL OPERATION AND A SUCCESSFUL RECOVERY?

It can happen. The surgery is a success. But if body tissue fails to heal properly, the patient may face the trauma of a second operation.

But now, a surgical mesh made from Marlex[®] plastic is giving patients a better chance of recovery. It interlaces with body tissue, strengthening it so



Surgical mesh made from Marlex plastic helps thousands of patients recover from surgery.

incisions can heal faster.

And who developed the plastic that helps patients avoid a return to surgery?

The same company that makes fine products for your car.

The Phillips
Petroleum Company.
Surprised?

The Performance Company

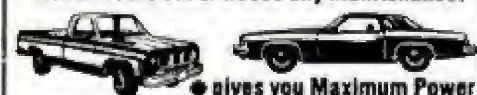


ALLISON 'OPTO-ELECTRIC' The BEST...the ULTIMATE of ALL Ignition Systems!



● (We challenge ANYONE to dispute this Fact).

★ Never wears out or needs any Maintenance!



● gives you Maximum Power with continuous PEAK PERFORMANCE

...while reducing Maintenance and Operating Costs!

★ The Allison OPTO-ELECTRIC System eliminates the Points and Condenser, replacing them with an OPTO-ELECTRONIC TRIGGER, using a Light-Emitting Diode and Photo transistor. The System operates on a beam of Light. As there are NO moving parts in rubbing contact, "Friction-wear" is completely eliminated...Timing adjustments are PERMANENT.

● Gives 40-Times more Timing accuracy than ANY system using "Mechanical" Breaker-Points! UNLIMITED RPM! "Electronically-Controlled" DWELL automatically supplies HIGHEST Performance at both Low and High speeds. Spark strength does not fall off at high RPM. POSITIVE SPARK helps eliminate "Misfire" for faster acceleration and improved Engine Performance. Sparkplugs LAST 3 to 10-Times LONGER.

● Easier Starting under any condition! Smoother running... (NO TIMING FLUCTUATION as with Magnetic Impulse Units). All SOLID-STATE Components. UNAFFECTED By Temperature, Moisture, or Vibration! Only Highest grade materials used... Guarantees you Solid, Dependable Performance!

● PERFECT TIMING INCREASES Engine Efficiency and Gas Mileage. SAVES Precious Fuel! Allison gives you MAXIMUM Engine Efficiency 100% of the Time... and that's the name of the game for the BEST in GAS MILEAGE AND ECONOMY.

★ Perfect Timing and Dwell never change.

● Pays for itself! Eliminates ignition Tune-Ups forever! "INFINITE LIFE"...Once installed... Never needs replacing!



★ PROVEN RELIABILITY!

Each Unit Tested to 15,000 RPM.

● Road and Race Proven.

(Opto-Electric Systems won at INDY Two years in a row!)

★ "EASIEST-TO-INSTALL" UNIT ON THE MARKET.
(Not necessary to dismantle Distributor as with other systems).

★ If you want the BEST, and SAVE! This is IT!

ORDER with CONFIDENCE...
SATISFACTION GUARANTEED

10-YEAR FACTORY WARRANTY!
(Free Repair or Replacement).

● Send Check or M/O
State Make, Year, Engine Size. (4, 6, or 8-Cylinder).

★ (So New...It's Sold ONLY FROM FACTORY DIRECT).

● You may use your MASTER CHARGE or BANKAMERICARD.
Send us (1) Your Number, (2) Interbank No., (3) Exp. Date.

M/C or B/A Card Holders, ORDER by TOLL FREE PHONE:
(800) 423-6525, Ext. 2 (When in Continental U.S.A.)
And YOUR ORDER will be SHIPPED IMMEDIATELY.

★ Before buying any other Type ignition system...

Send Postcard for our FREE BROCHURE.

★ If you have already installed a C-D ignition system,
Modernize and Increase its Efficiency...

CONVERT YOUR "C-D" UNIT TO BREAKERLESS!
Opto-Electric "TRIGGER UNIT"...Only \$34.95

● Our BEST Salesmen are the users of our ALLISON System!



America's Oldest and Largest Mfg. of
Opto-Electronic Ignition Systems.

ALLISON
AUTOMOTIVE COMPANY

1267-X, East EDNA PL., COVINA, CAL. 91722

The shrinking of the zoom

Zoom telephotos are getting compact,
sharp and less expensive.



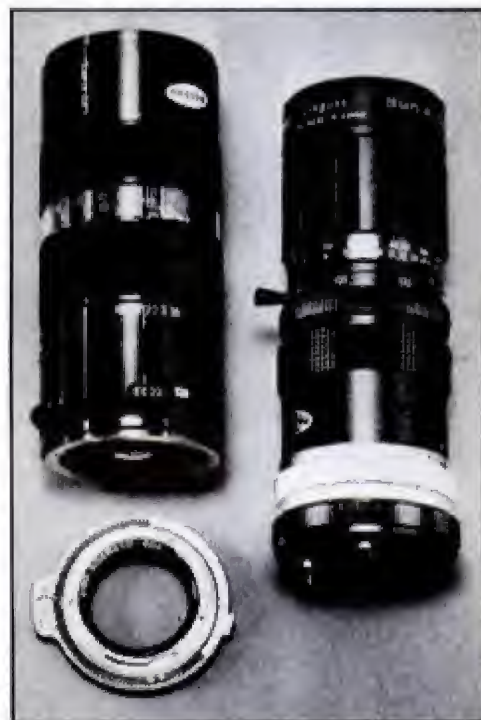
85-210-mm zoom Tamron (above, left) and Sun (above, center) are hardly bigger than nonzoom 200-mm Vivitar tele (above, right). Sun's lens hood is detachable; others' slide back. Special features (right) include interchangeable camera adapter and "EE" diaphragm setting for camera with electric eye (Tamron), and handy tab for quicker zooming on Sun telephoto.

Zoom lenses are getting almost as light, compact, sharp and inexpensive as fixed-focal-length ones, to judge from the 85-210-mm Spiratone/Sun and Tamron zooms that I've just tested.

Zooms have always had two advantages over fixed lenses: You have only one lens to buy and carry to match the coverage of two or more conventional lenses. It's quicker to adjust a zoom lens than to remove a lens and mount another one. And zooms give you not only the standard focal lengths like 85, 105, 135 and 200-mm, but all the nonstandard ones in between. So if you need a 167½-mm lens to frame your picture precisely as you want it, then only a zoom will do.

But zooms are larger, heavier and more expensive than any one of the lenses they replace. And they're never quite as sharp as lenses of fixed focal length.

When comparing the Spiratone/Sun and Tamron to a modern 200-mm lens, though, the zooms stand up quite well. In size, the Tamron is just under 6 inches long, the thinner Sun



lens 6¾ inches—an inch or two longer than our reference 200 mm, but shorter than some others and a bit slimmer. In weight, both the 26-ounce Tamron and 22-ounce Sun are heavier than our 18-ounce reference, but again lighter than some older 200-mm designs.

The big question is performance—and these zooms do perform. Our reference telephoto did have slightly better contrast and sharpness than the zooms, but not to any great degree. You'd be more apt to feel hampered by the one-stop difference between the f/4.5 zooms and an f/3.5 tele. Price of the sleekly styled Tamron lens is \$310; the Spiratone/Sun is \$110-\$125, depending on the mount that is selected.—Ivan Berger

SOME STRONG REASONS WHY DATSUN IS THE NUMBER ONE SMALL PICKUP.



Two bed sizes. Datsun gives you two tough choices. You can get our Li'l Hustler with a 6-ft. bed. Or our Li'l Hustler Stretch with a longer 7-ft. bed.

Outstanding economy. Datsun Saves. If you harbor doubts, just witness Li'l Hustler's gas mileage figures: 31 MPG highway, 22 city. These are EPA mileage estimates with manual transmission. Of

course, your actual MPG may be more or less, depending on the condition of your truck and how you drive.

Strength in features. Our truck buyer's checklist begins: all-steel body and bed. Muscular 2000cc overhead cam engine. Rugged ladder-lattice frame. Tough torsion bar front suspension. Heavy-duty truck tires. And more, too numerous to mention.

Strong backing. To keep your Datsun trucking, there are nearly 4,000 factory-trained service technicians coast-to-coast. Plus a vast computerized parts network. That's how we plan to stay number one.

We figure the longer your Datsun survives, the longer you'll save.

Datsun Daves



The proud smoke

Product of a proud land.

Tobacco. It's as proud a part of the American tradition as The Alamo. At Liggett & Myers, we've made tobacco into a cigarette worthy of that tradition. The rich, mellow, distinctively smooth L&M. Smoke it proudly.

For color poster of The Alamo without commercial identification, send 2 L&M pack bottoms and 75¢ to P.O. Box 60-1904, Minneapolis, MN 55460. Offer void to persons under 21 years of age. Good in U.S. only, except where prohibited, licensed, taxed or restricted by law. Offer expires December 31, 1976. Allow four to six weeks for delivery.

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

Filter King: 18 mg. "tar", 1.2 mg. nicotine av. per cigarette, by FTC Method.

Материал. Запрещенный к использованию продукт.



How to avoid the accident you'd never forget

You've got to react differently than you ever have before—just jamming on the brakes may not be enough to save a life.

by Jim Liston



Plastic barrel is shot out in path of the car in one of several driving tests recently conducted by the Calspan Corp. The barrel was tethered so it would stop in the middle of the lane. Most of the drivers "killed it" by locking up their brakes and sliding into it. Only one evaded the barrel by quick, evasive maneuvering.

You're driving at 30—well within the limit—on a two-lane road when out of nowhere a boy on a bike zips from behind a parked car, looks up, tries to stop and falls sideways in front of you. You grip the wheel, jam on the brakes, hear your tires squeal and feel a soft thud as the car skids to a stop.

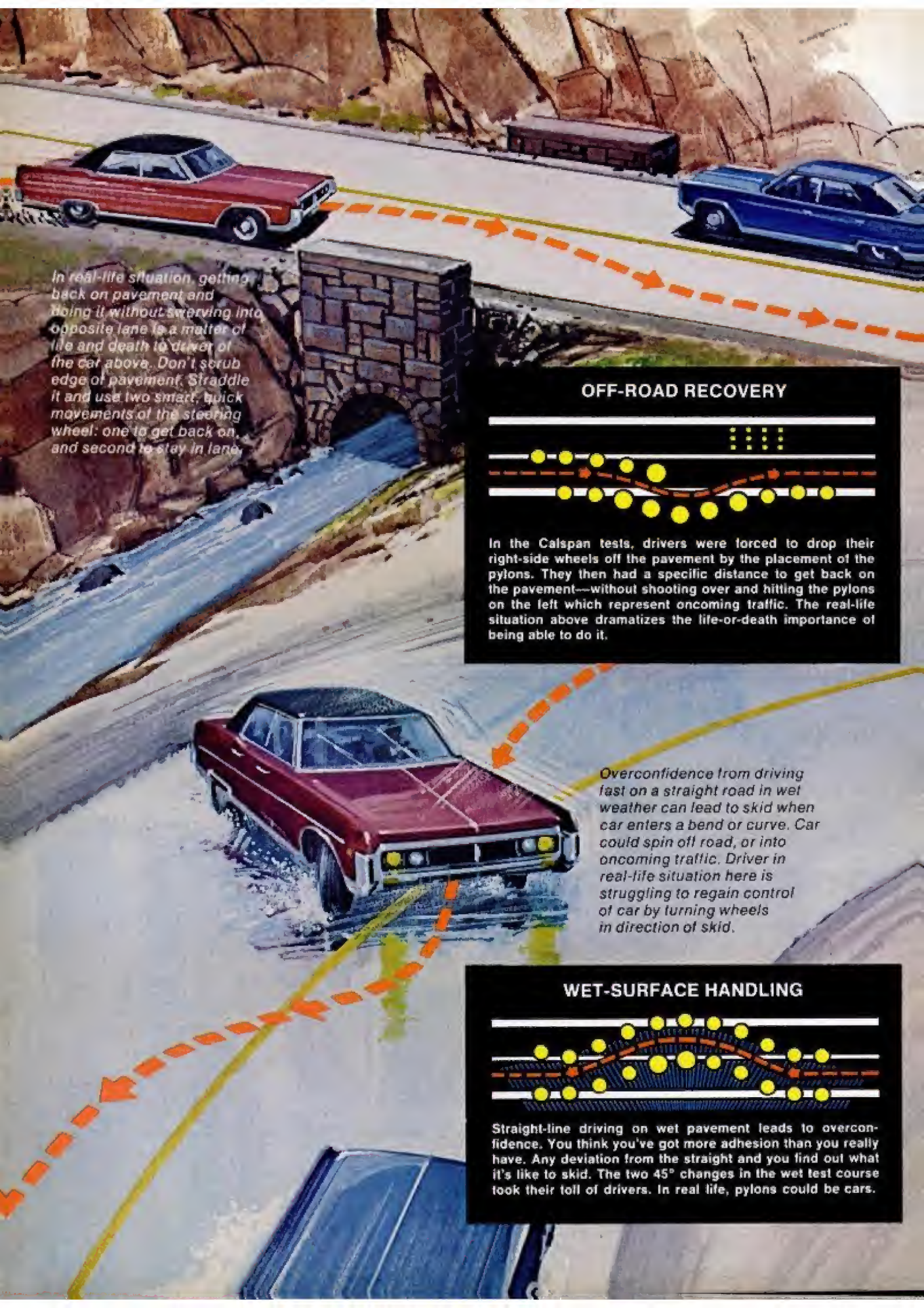
What has happened in seconds will be replayed for you over and over through many sleepless nights, because the unthinkable has happened: You have hit a child.

If, in fact, you ever hit a pedestrian—even though you are not at fault—it will be *the accident you can never*

forget. Yet what chance do you have when someone suddenly runs out in front of you? If you react like 33 of 34 drivers tested at Calspan Corp.'s Buffalo proving ground recently, you'll hit the pedestrian.

Researchers, studying how average American drivers handle a car in an emergency, devised this test:

As a car speeds down a straight-away on the driving course, it crosses a tape set 110 feet from a small shed at the side of the roadway. From the shed a plastic barrel—the "pedestrian"—is shot in front of the car. Calspan engineers carefully timed this so a driver traveling about 50



In real-life situation, getting back on pavement and doing it without swerving into opposite lane is a matter of life and death to driver of the car above. Don't scrub edge of pavement. Straddle it and use two smart, quick movements of the steering wheel: one to get back on, and second to stay in lane.

OFF-ROAD RECOVERY



In the Calspan tests, drivers were forced to drop their right-side wheels off the pavement by the placement of the pylons. They then had a specific distance to get back on the pavement—without shooting over and hitting the pylons on the left which represent oncoming traffic. The real-life situation above dramatizes the life-or-death importance of being able to do it.

Overconfidence from driving fast on a straight road in wet weather can lead to skid when car enters a bend or curve. Car could spin off road, or into oncoming traffic. Driver in real-life situation here is struggling to regain control of car by turning wheels in direction of skid.

WET-SURFACE HANDLING



Straight-line driving on wet pavement leads to overconfidence. You think you've got more adhesion than you really have. Any deviation from the straight and you find out what it's like to skid. The two 45° changes in the wet test course took their toll of drivers. In real life, pylons could be cars.

mph couldn't possibly avoid the barrel by braking, but had enough time to steer around it. The barrel was tethered; it could go only as far as the center stripe, leaving open a 10-foot left lane and a hard-packed shoulder. Driver after driver slammed into the barrel after braking. Some then tried to steer with their wheels locked. One out of four lost control of the car when surprised by the barrel. Others "froze"—did nothing. Only one driver, a woman who was traveling at 44 mph, avoid-

ed the barrel by steering around it.

"It's smarter to chance steering around an obstacle than to lock up and slide into an accident," says Roy Rice, Calspan's project engineer.

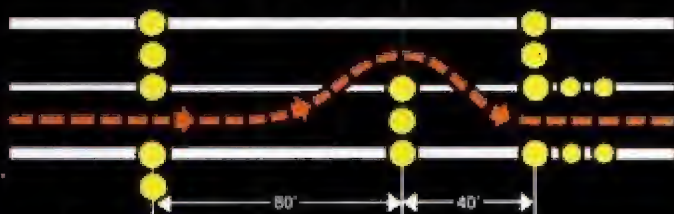
Avoiding a pedestrian was but one phase of the 18-month, \$100,000 study for the General Motors Corp. Calspan researchers found that the impulse of most drivers to use panic

braking rather than evasive action accounted for errors in other simulated emergencies.

"The typical driver didn't use the full potential of the car in terms of its cornering capabilities and handling qualities—even at 30 to 40 mph," says Rice. "He seemed unaware that it's virtually impossible to overturn the modern American car on an unobstructed surface."

The research program had two ob-

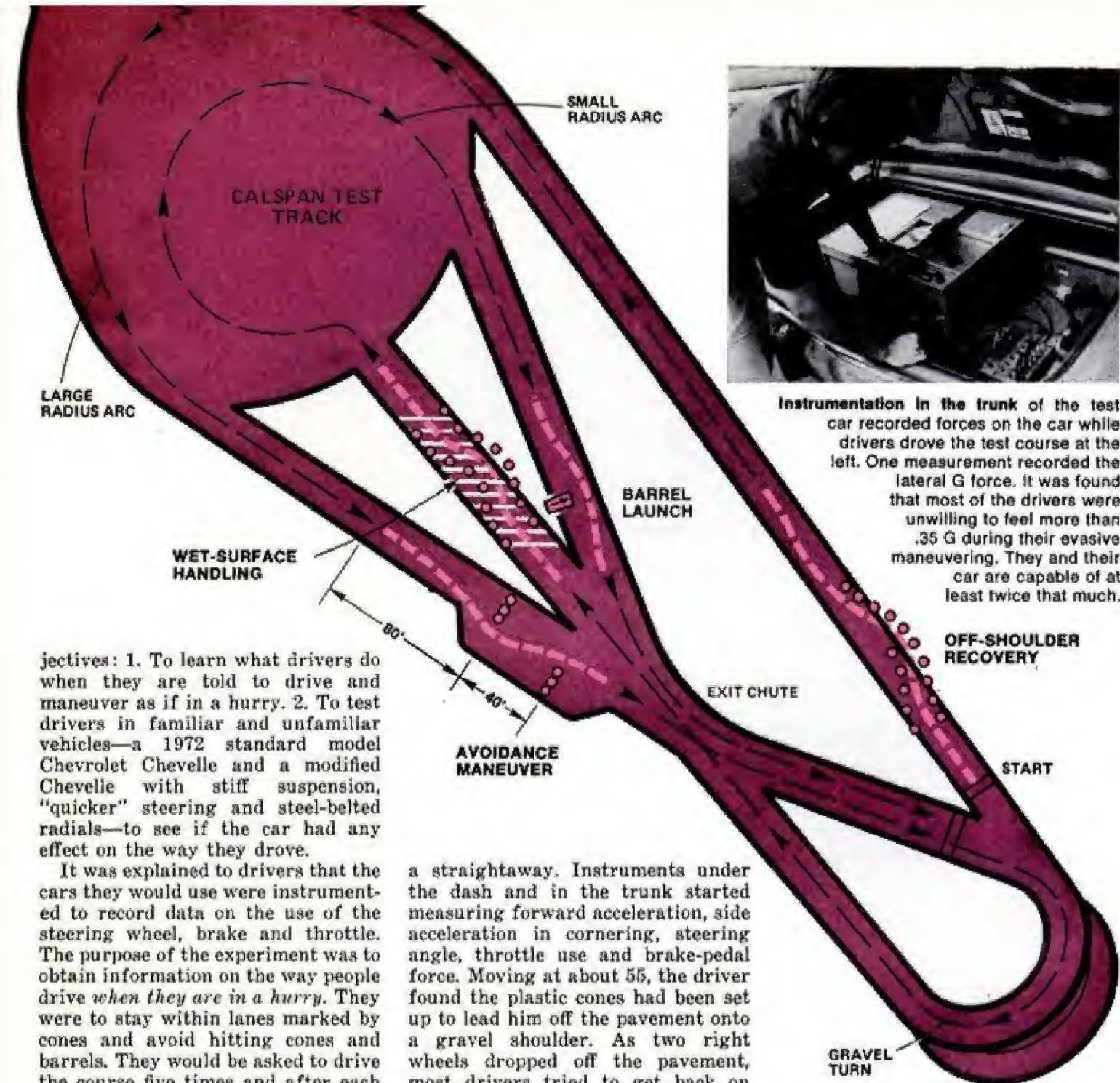
AVOIDANCE MANEUVER



This test required drivers to change lanes which they then found blocked; they had only a short distance to get back to the original lane. Test showed that most drivers do not use the full cornering and avoidance capability of their car. In the real-life situation, the ability to get around the truck with two brisk maneuvers could prevent sliding into the truck with locked brakes or, worse, a head-on collision.

In real-life avoidance situation, driver who has come around bend and sees truck blocking the lane does not panic and lock up brakes. He instantly judges whether he can maintain or even increase speed to get safely around the truck.





Instrumentation in the trunk of the test car recorded forces on the car while drivers drove the test course at the left. One measurement recorded the lateral G force. It was found that most of the drivers were unwilling to feel more than .35 G during their evasive maneuvering. They and their car are capable of at least twice that much.

jectives: 1. To learn what drivers do when they are told to drive and maneuver as if in a hurry. 2. To test drivers in familiar and unfamiliar vehicles—a 1972 standard model Chevrolet Chevelle and a modified Chevelle with stiff suspension, "quicker" steering and steel-belted radials—to see if the car had any effect on the way they drove.

It was explained to drivers that the cars they would use were instrumented to record data on the use of the steering wheel, brake and throttle. The purpose of the experiment was to obtain information on the way people drive *when they are in a hurry*. They were to stay within lanes marked by cones and avoid hitting cones and barrels. They would be asked to drive the course five times and after each trial they would be scored on time and the cones or barrels hit.

"Assume you find yourself in a situation requiring you to drive a strange automobile at the maximum of your ability on a road you have never traveled before. Time is an extremely critical factor, but just as critical and important is your safe arrival at your destination, requiring you to accurately maneuver this vehicle through various road configurations, conditions and hazards. The cones will tell you where the patch may narrow or curve. The barrels represent *fixed obstacles* (tree, other vehicle and so forth) in your path. Your score will depend on both your speed and accuracy through the course."

Off-road recovery

With that, the driver took off down

a straightaway. Instruments under the dash and in the trunk started measuring forward acceleration, side acceleration in cornering, steering angle, throttle use and brake-pedal force. Moving at about 55, the driver found the plastic cones had been set up to lead him off the pavement onto a gravel shoulder. As two right wheels dropped off the pavement, most drivers tried to get back on immediately. But because the tires were scrubbing the edge of the pavement, drivers had to muscle the steering. As a result, the car snapped back and shot over to the opposite lane. The pylons went down like pins in a bowling alley—proof the driver was in the oncoming lane.

In subsequent runs over the course, many drivers discovered the secret of off-road recovery; Don't *ease* the car back on the pavement; your tires will scrub the edge of the road. Instead, straddle the edge, get back with a sharp turn and a quick return to the straight-ahead steering position the moment the tire hits the pavement.

Continuing on course, a driver found the pylons leading him into a gradual curve to the left. (This and a small-radius curve were simulations of long and short freeway exit ramps.) He'd been told to hurry so

he took this as fast as he could. Since the curve was unbanked, he found it hard to keep from drifting to the outside and knocking down pylons.

Avoidance maneuver

Drivers accelerated as they came off the curve. Barrels blocked their lane, but a lane was open to the right. As they neared it, drivers discovered it was only a few car lengths long. They'd have to make a lane change and get right back. To do this, many drivers used hard or panic braking, often locking up all four wheels. When they tried to steer around the barricade with wheels locked, they had no control. Others got around it but not back into their lane without knocking down cones because they didn't swing the wheel over hard enough.

To establish that it was possible to

(Please turn to page 124)

IT'S NEW

NOW

World's mightiest offshore oil rig

Taller than a 50-story skyscraper and nearly as big as a football field, the mammoth structure at right is the world's mightiest offshore oil-drilling rig. Called the *Beryl A*, the huge Mobil Oil platform will operate in the stormy waters of the North Sea near the Shetland Islands off Scotland. It will pump and process up to 100,000 barrels of oil a day, can store



900,000 barrels in its hollow concrete "legs" and has accommodations for 120 technicians. To get the upper section onto its supports, the double-decker platform was first constructed across two modified tankers (above), then the columns were sunk to just above water level and the platform moved over them and attached. The giant weighs 330,000 tons and towers 300 feet above the waves. Its cost? A cool \$300 million.



Hot torch

You can braze or hard-solder with this Mapp gas torch said to create as much heat as expensive acetylene rigs. Nozzle swivels for easy handling in awkward spots, fits propane tanks for lower-temperature soldering jobs. TurboTorch has two nozzle tips, igniter, brazing rods, heat shield. \$36.45 ppd. Wingersheek, Inc., 2 Dearborn Rd., Peabody, Mass. 01960.



Roll your own fireplace 'logs'—from paper

You save on fuel and also get rid of old newspapers at the same time with this handy paper-log roller for fireplace use. You just feed in the paper, turn a crank and out come neatly rolled cylinders ready for tying into log-size bundles. The cast-iron roller with turned wood handles also makes an attractive fireside accessory, is \$29.98 with 200 wire ties. Extra ties: \$4.98 per 500. Christen, Inc., 59 Branch St., St. Louis, Mo. 63147.



Look of oak for prices of hardboard

What a big difference a small, inexpensive improvement can make in a room is shown in photos here. At right is room before addition of decorative paneling along one wall, as above. Paneling is Masonite's new Briarcliff design—prefinished hardboard simulating warm, rich oak paneling in 4x8 sheets.



Versatile wrench and bit driver

Squeeze-action socket wrench gets into tight places where you can't swing a handle. Tite Squeez set has English and metric sockets, adapter for Allen and screwdriver bits. \$19.95. Three Sons, 245 East Gunhill Rd., Bronx, N.Y. 10467; also Consumer & Industrial Tool Corp., 7300 Melrose, Buena Park, Calif. 90620.





Canard-winged VariEze is a mini version of its famous bigger brother, the VariViggen (page 145, March '73). It's shown here fitted with special auxillary fuel tank in rear seat just before setting world distance record. For more, see article that follows.



Osprey 2 is two-place model of earlier single-seater version, has surprisingly sleek lines for an amphibian. Hull is polyurethane foam covered with fiberglass. Powered by 150-hp Lycoming, plane can hit 145 mph, cruises at 130, lands at 60. Length is 21 feet; wingspan, 26. Plans are \$150 from George Perelra, 3741 El Ricon Way, Sacramento, Calif. 95825.



10 handsome homebuilts you can make and fly

Here's a look at some of the latest, smartest designs for amateur plane-builders.

Most can be constructed from available plans, some even from ready-to-assemble kits.

by Sheldon M. Gallager and Howard Levy

Partially completed Corsair (minus one wing) looks like the real thing except it's a 1/2-scale replica of the famous World War II fighter. The wings fold, as did those on the original, and the gear retracts into wheel wells on the underside. Top speed is about 165 mph with 70-hp VW engine. Plans are \$125; a wood kit without engine, \$400. War Aircraft Replicas, 348 South 8th St., Santa Paula, Calif. 93060. Also available are plans and kits for scaled-down versions of the Focke Wulf FW-190, Sea Fury and P-47.





Spencer Air Car (above) is roomy four-place amphibian with 285-hp Continental engine. Wingspan is 37 feet, max. speed 150 mph. Plans \$185; kits also available. P.H. Spencer, 8725 Oland Ave., Sun Valley, Calif. 91352. Sporty Namu II (facing page) seats two, does 135 mph with 125-hp Lycoming. Plans available. Peter Bowers, 13826 Des Moines Way S., Seattle, Wash. 98168.



Super Fli (above) is aerobatic single-seater, has been flown by top aerobatic pilots who report good handling. A 200-hp Lycoming provides a top speed of 200 mph, a rate of climb of 3000 feet per minute. Wingspan is 24 feet. Plans and kits expected. Kraft Systems, 450 West California Ave., Vista, Calif.



It looks like it's upside down, but it really isn't. The Mini-imp (below) uses an inverted-Y tail and new NASA-designed airfoil for high performance. Takes engines from 60 to 100 hp, is stressed to 9 Gs for aerobatics. Plans \$200; kits available. M. B. Taylor, Box 1171, Longview, Wash. 98632.



Colorful Acroduster I (above) is versatile new competition aerobatic bi-winger you can build from a kit. Wings have symmetrical airfoil for inverted flight, incorporate four ailerons, give roll rate of 240° per second. Top speed is 195 mph with 200-hp Lycoming engine. Wingspan is 19 feet; length, 15 feet, 9 inches. Fuselage and tail are aluminum; wings, Dacron-covered wood. The kit is \$5500 from Stolp Starduster Corp., 4381 Twinning, Riverside, Calif. 92509.

Two low-cost, low-wing monoplanes are the Hauscat (right), patterned after Grumman Bearcat and Mono Z (below), a single-seater version of earlier Zenith (page 162, March '74). Both are VW-powered and cost about \$2500 to build. Plans are \$125 for Hauscat, Yvan Bougie, 11 Terrasse-Robert, Nitro-Valleyfield, Que.; \$130 for Mono Z, Chris Heintz, 236 Richmond St., Richmond Hill, Ont.



VariEze: A plane

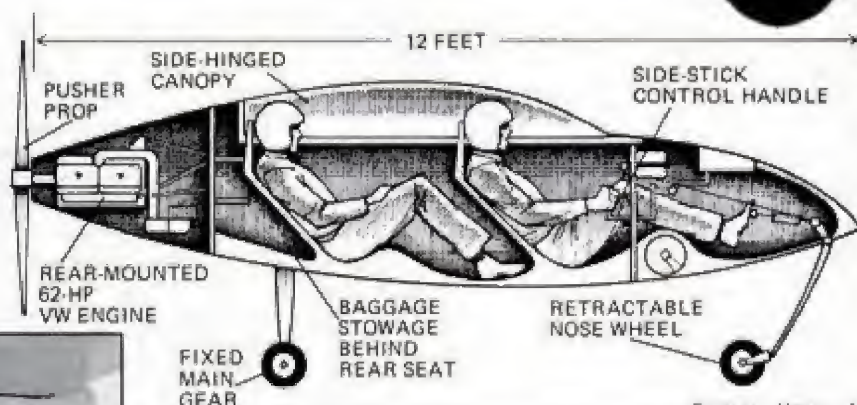
by Sheldon M. Gallagher and Howard Levy

Twin tail fins contain rudder controls but aren't really tails in conventional sense. They're wingtip "winglets" that help break up vortex turbulence to reduce drag. Photo below shows specially shaped luggage carriers that fit like a "boot" into limited storage space behind rear seat.



Sharply swept-back main wings contain no control surfaces, making them aerodynamically "clean" for minimum drag, high performance, easy construction. Elevons—combined ailerons and elevators—are up front.

Retractable nose wheel allows plane to "kneel" like a camel. This makes getting in and out easier, raises rear prop for convenient hand starting and compensates for tail-heavy condition with no pilot aboard. Drawing at right shows compact dovetailing of cockpits to save space.

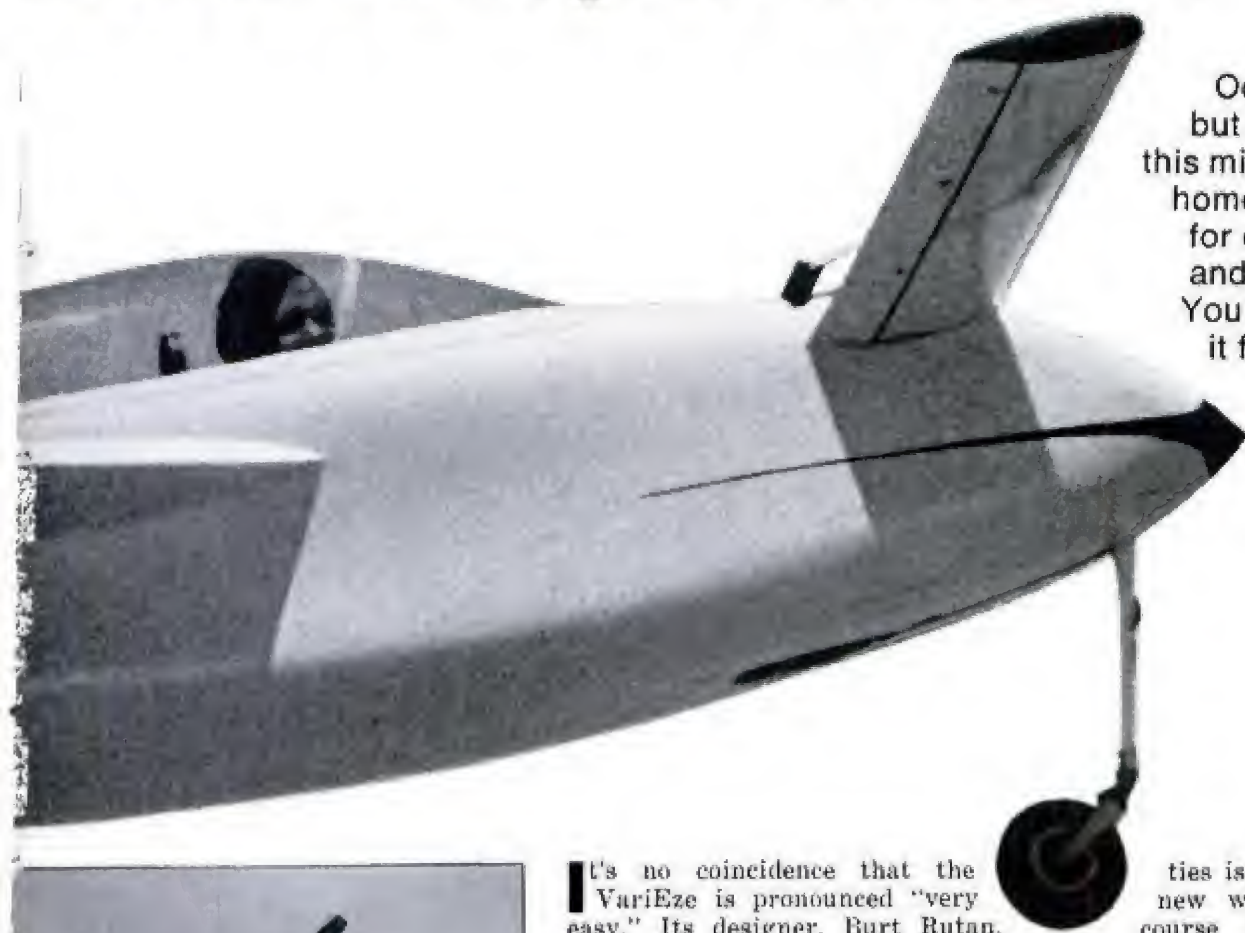


Photos: Henry Artel



that lives up to its name

Odd in appearance but not performance, this mini canard-winged homebuilt is designed for easy construction and superb handling. You'll be able to build it from plans or kits.



Rear view shows pusher prop and wide-bodied fuselage that flares into wings. Fuel tanks are housed in these thick wing-root sections so they take up no space inside craft itself. Bow-shaped main landing gear strut is single piece passing straight through the fuselage. This eliminates separate struts, simplifies mounting, lessens impact strain on airframe attachment points. Engine is 62-hp VW, giving a 185-mph cruise speed.

It's no coincidence that the VariEze is pronounced "very easy." Its designer, Burt Rutan, planned it that way. He wanted a plane that would be easy to build and fly, yet embody advanced aerodynamic principles to give high performance, good maneuverability and safe handling. Rutan, former chief engineer for Bede Aircraft and now head of his own aircraft company, knows what he's about. The VariEze is all these things and more. It may appear a bit odd—until you see it fly. Then it becomes a gracefully soaring, spectacular sight.

At first glance, the VariEze looks like a mini scaled-down version of Burt's famous VariViggen (page 145, May '73). Actually, it's considerably more sophisticated. Like the VariViggen, it has a pusher prop and stubby nose wings called canards. Unlike the earlier craft, it gets a 185-mph cruising speed from a bitty 62-hp VW engine. The VariViggen uses 150 hp to cruise at 150 mph. Thus the VariEze is 35 mph faster on less than half the power—that's Efficiency with a capital E.

Record-breaking endurance

With a length of just 12 feet, the VariEze is even shorter than the little Bede BD-5 and manages to squeeze in twin tandem cockpits against the BD-5's single seat. One indication of the midget's capabili-

ties is that it recently set a new world nonstop, closed-course distance record for planes in its size class (under 1102 pounds). It covered 1638 miles in 13 hours, 3 minutes, for an average gas consumption of 3.1 gallons per hour—this time Economy with a capital E. The new record bettered by nearly 100 miles the previous mark.

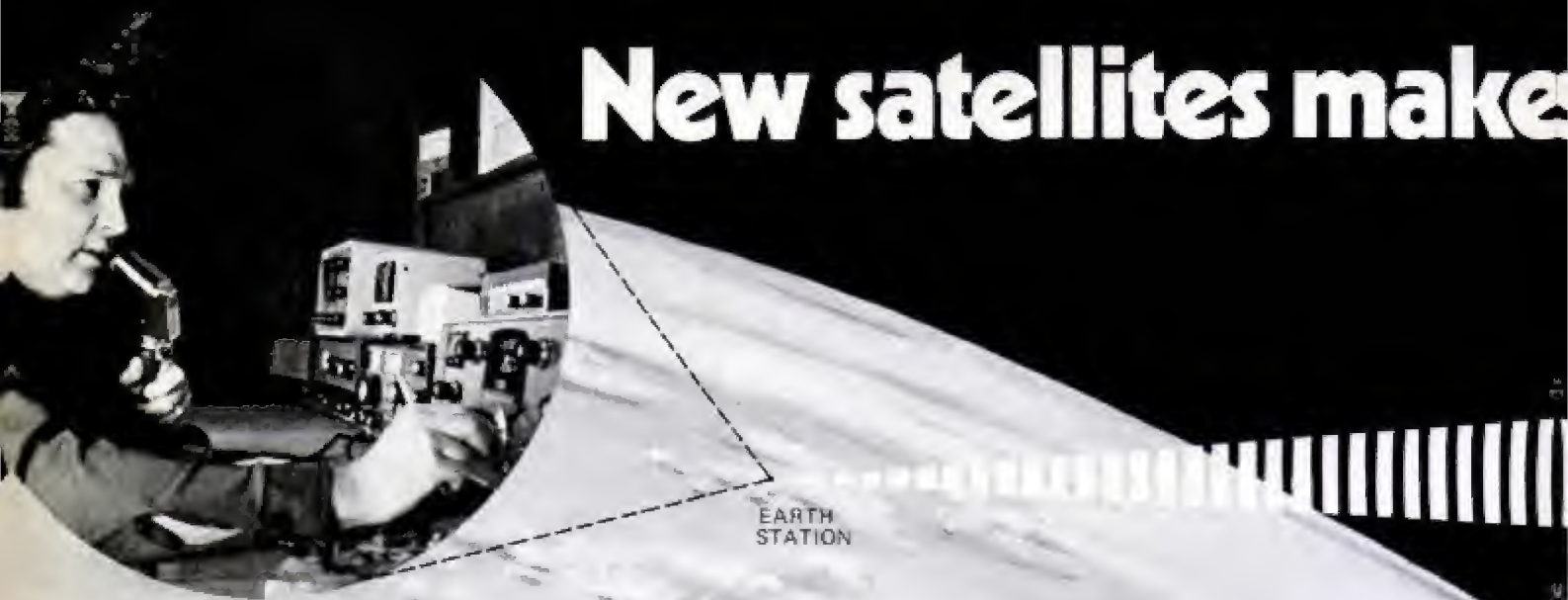
Light weight, clean lines

The secret of the VariEze's superb performance lies in its exceptionally low weight—only 390 pounds empty—and its aerodynamically "clean" lines. There are no control surfaces in the main wings to disrupt a smooth airflow. This reduces drag and at the same time simplifies construction of the plane.

Small finlike "winglets" at the tips help break up vortex turbulence to further reduce drag. They also contribute to directional stability and incorporate rudder controls. The rudders work in an interesting way: Each one swings in only one direction—to the outside. You use the right rudder in a right turn, the left rudder in a left turn. In each case, the opposite rudder remains stationary. This unique arrangement simplifies control linkage hookup since you need only a single pull cable to actuate each rudder—the swing back to neutral position is accomplished

(Please turn to page 158)

New satellites make



Dr. Peter Penham, one of Africa's flying doctors working out of a little village on the northern slope of Mount Kilimanjaro, Kenya, has been bitten by the OSCAR bug. Somebody gave Pete an old radiotelephone, a vacuum tube and some coaxial cable. The doctor added some empty aspirin tins and a quartz crystal from his airplane radio. Right out there in the African bush he fired up a home-brew transmitter built on the aspirin tins and talked to the world through OSCAR—the Orbital Satellite Carrying Amateur Radio.

The excitement gripping Pete as he built the transmitter reached fever pitch as he sent a signal up to a satellite 900 miles overhead and heard his call letters, 5Z4JJ, coming back down to his receiver. His very first chat with another ham radio operator, through the satellite, was with amateur station 4W1ED, more than 1000 land miles away in Yemen.

Since his contact last year with Yemen, Pete has communicated with amateur radio operators in 18 different countries on three continents. Meanwhile, Suby, operator of ham station VU2UV in southern India, has been talking with hams in Finland, Rhodesia, Poland, Germany, Japan and the USSR via the satellite. Dick

Cotton, owner of station W8DX in Detroit has used OSCAR to talk with hams in 51 different countries on five continents.

Vic Politi, WINU of Fairfield, Conn., is an amateur bulletin station, broadcasting news about OSCAR through OSCAR to anybody interested. Bud Schultz, W6CG of Anaheim, Calif., has earned an award for contacting other ham operators in each of the 50 states through the satellites.

Thousands are using OSCAR

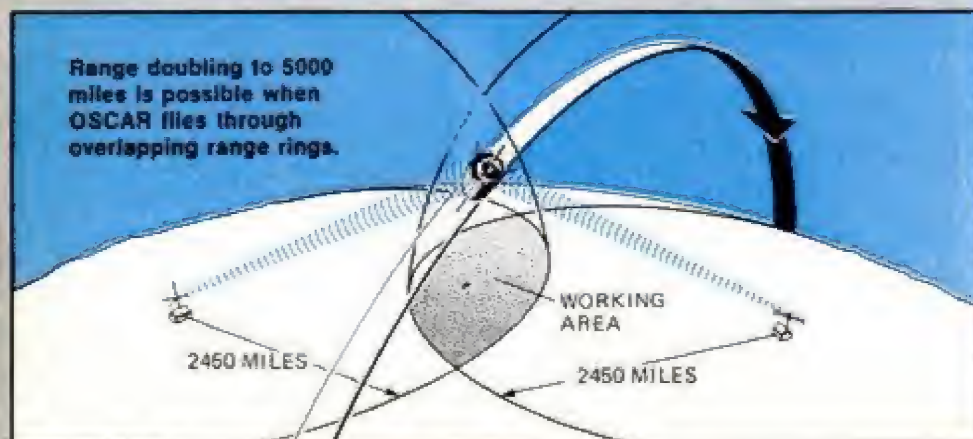
OSCAR satellites are the hottest news in ham radio. The hobby, which started radio broadcasting and point-to-point communications at the turn of this century, is in the grip of OSCAR fever. Thousands of hams in nearly every nation of the world are geared up and riding along electronically every day on two satellites they designed, built and financed. Many more are preparing for the ride.

There have been seven OSCAR satellites in orbit. All have gone into orbit as piggyback riders on rockets blasting government satellites into space. The National Aeronautics and Space Administration (NASA) uses OSCARs instead of deadweight ballast to further public education in

space science. Two ham satellites, OSCAR 6 and OSCAR 7, remain up there today, circling the globe in 900-mile-high polar orbits every couple of hours. OSCAR 6 was launched in 1972 alongside an ITCS weather satellite. OSCAR 7 rode aloft in 1974 with the NOAA 4 weather satellite and the Spanish INTASAT satellite. Hams use their satellites by transmitting signals up to OSCAR, which retransmits the signals back to Earth.

Satellites built by hams

OSCAR satellites have been built by hams from many countries. For instance, the 65-pound OSCAR 7 includes a telemetry system built by



Orbit-bound is an OSCAR riding as piggyback ballast on a Delta rocket.

ham listening more fun

You can tune in the fascinating worldwide network of amateur radio buffs whose 'homebuilt' satellites orbit in space.

by Anthony R. Curtis, K3RXK



RECEIVING ANTENNA

10-METER DIPOLE TRANSMITTING ANTENNA

RECEIVING ANTENNA

OSCAR 7

RECEIVING ANTENNA

SOLAR PANELS

OSCAR 6

RECEIVING ANTENNA

10-METER DIPOLE TRANSMITTING ANTENNA

TRANSMITTING ON 2-METER BAND

RECEIVING ON 10-METER BAND

SOLAR PANELS

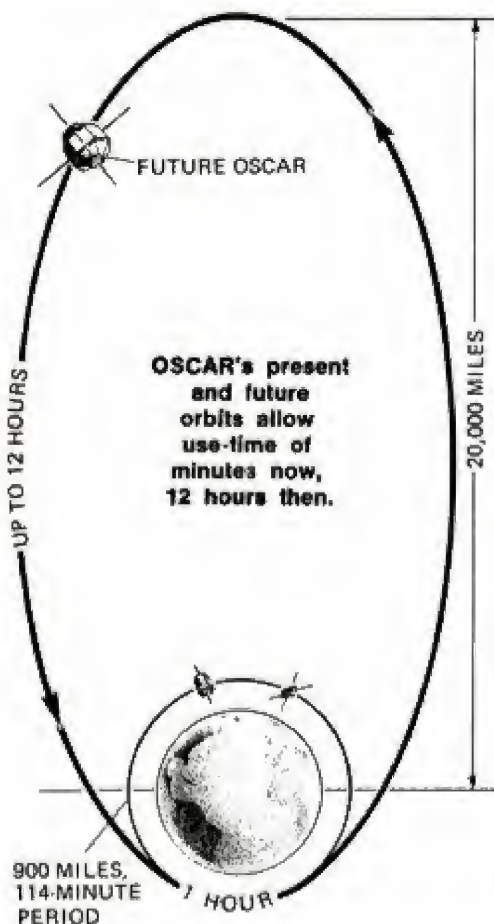
Designed, built and financed by hams, OSCAR 7 and 6, above, receive and retransmit signals from and to Earth stations like those shown here. You can listen in.

EARTH STATION





A typical Earth station will use relatively low-powered rigs to talk through OSCAR.



Australian hams, one retransmitting system built by German hams, another rebroadcaster built by Americans, a beacon transmitter built by Canadian hams and another beacon built by a San Bernardino, Calif., ham club. New and even more sophisticated amateur satellites are under construction.

OSCAR fever hit me hard. Sputnik, Pioneer, Vanguard, Explorer, Apollo—18 years of space satellites in the news made me dream of getting into the space age. When amateur satellites made space communications possible for the man-on-the-street, I had to be in on the action. Thousands of other hams had the same gut reaction.

Anybody can listen

First, I wanted to hear the Morse-code telemetry beacon from the satellites. Then I wanted to be able to transmit through the satellites to other hams and shortwave listeners. I had a shortwave receiver just like any shortwave radio listener's. The radio was capable of being tuned to the amateur radio 10-meter band. Both OSCARs transmit down to Earth on frequencies between 29.400-29.550 MHz. Most popular general-coverage shortwave radios cover 550 KHz to 30 MHz which spans the OSCAR downlink frequencies. Anybody with one of these receivers can sit at home and listen to OSCAR.

Amateur radio operators transmit up to OSCAR on frequencies in the two-meter ham band. OSCAR repeats what it hears by retransmitting down in the 10-meter ham band. It is only necessary to listen in on 10 meters to hear everything going through OSCAR. Signals passing through OSCAR are in voice and in

(Please turn to page 131)

OSCAR HISTORY

Amateur radio will mark its 15th anniversary in space this year. It was 12:42 p.m. on Dec. 12, 1961, when a Thor-Agena rocket lifted on a pillar of flame from Vandenberg, Calif., carrying a 10-pound OSCAR satellite aboard as ballast.

Working evenings, weekends and during every spare moment in basements, garages and attics, hams have built seven OSCARS. Here's a rundown:

OSCAR 1 carried a transmitter with power of only one-tenth of a watt which transmitted telemetry in a beacon to Earth for three weeks.

OSCAR 2, launched June 2, 1962, was identical to OSCAR 1 with telemetry-beacon transmissions lasting 18 days.

OSCAR 3, launched March 9, 1965, was amateur radio's first active communications satellite. It received ham signals and retransmitted them at the high output power of one watt. It made history as the first free-access communications satellite. One hundred different amateur stations in 16 countries communicated through the satellite during its two-week life.

OSCAR 4, launched Dec. 21, 1965, was an active satellite with three watts output. It did not make a good orbit, but hams did communicate through it, including the first direct U.S.-to-U.S.S.R. contact via satellite.

OSCAR 5, launched Jan. 23, 1970, was built by students at Melbourne University, Australia, and launched from the United States under auspices of the AMSAT. Its batteries lasted 1½ months.

OSCAR 6, launched Oct. 15, 1972, is still going strong as an active repeater satellite. It hears ham signals and retransmits them. The 40-pound satellite can store messages and repeat them. It can be turned on or off by ground command. Transmitter power is one watt.

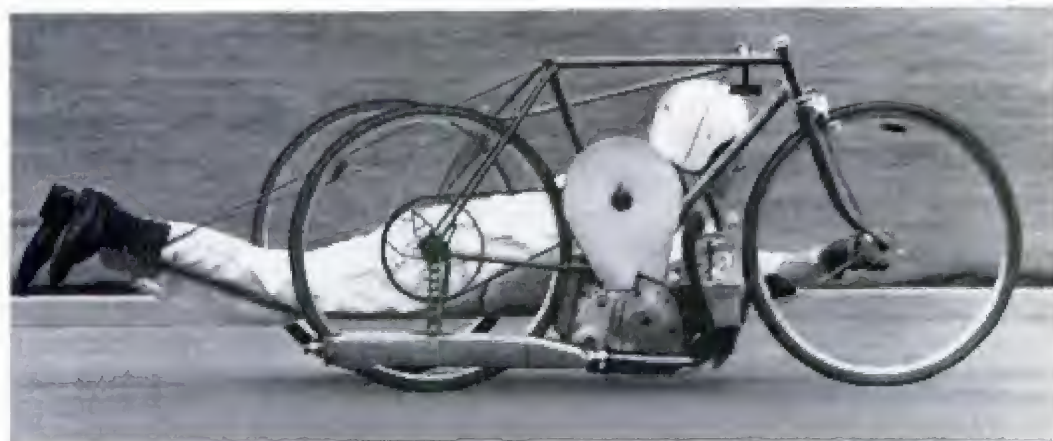
OSCAR 7, launched Nov. 15, 1974, was built by hams in Germany, Canada, Australia and the United States. It has two separate communications repeaters on board with two watts power. It can store messages for later replay, be turned on or off at ground command. Medical data, weather bulletins and other emergency communications have been transmitted through the 65-pound OSCAR 7.

WHEN TO LISTEN FOR THE OSCAR SATELLITES*

Day	Date	OSCAR over eastern U.S. p.m. EST	OSCAR over central U.S. p.m. CST	OSCAR over western U.S. p.m. PST
Sat.	Jan. 31	8:25-8:45	9:20-9:40	9:15-9:35
Sun.	Feb. 1	7:25-7:45	8:20-8:40	8:15-8:35
Mon.	Feb. 2	8:20-8:40	9:15-9:35	9:10-9:30
Wed.	Feb. 4	8:15-8:35	9:10-9:30	9:00-9:25
Fri.	Feb. 6	8:05-8:30	9:00-9:25	8:55-9:20
Sun.	Feb. 8	8:00-8:25	8:55-9:20	8:50-9:15
Wed.	Feb. 11	8:55-9:15	9:50-10:10	9:45-10:05
Thur.	Feb. 12	7:50-8:10	8:45-9:05	8:40-9:00
Fri.	Feb. 13	8:50-9:10	9:45-10:05	9:40-10:00
Sat.	Feb. 14	7:40-8:00	8:35-8:55	8:30-8:50
Sun.	Feb. 15	8:45-9:05	9:40-10:00	9:35-9:55
Mon.	Feb. 16	7:35-7:55	8:30-8:50	8:25-8:45
Wed.	Feb. 18	7:30-8:00	8:25-8:55	8:20-8:50
Fri.	Feb. 20	7:20-7:55	8:15-8:45	8:10-8:45
Sun.	Feb. 22	7:15-7:50	8:10-8:45	8:05-8:40
Wed.	Feb. 25	8:20-8:40	9:15-9:35	9:10-9:30
Thur.	Feb. 26	7:05-7:25	8:00-8:20	7:55-8:15
Fri.	Feb. 27	8:15-8:35	9:10-9:30	9:05-9:25
Sat.	Feb. 28	8:50-9:10	9:45-10:05	9:40-10:00

*These are the best listening times though the satellites can be heard at other times. A complete list of times for any month of the year is available from AMSAT.

IT'S NEW NOW



One way to save on gas

If you don't mind doing your traveling lying face down, you can get 845 miles to the gallon in the bike-like rig at left. British designer Brian Beattie accomplished the feat in a recent fuel-economy competition staged by Shell Oil at Appleton, England, beating out six other contestants. His machine is built of bicycle parts and powered by a 50-cc moped engine. Steering is by a single control arm that also contains throttle and tachometer. Beattie's next attempt will be to establish a 1000-mpg record.

Ford engines fly again

With a growing shortage of aircraft engines for light planes, builders are turning to automotive conversions to fill the gap. Converted VWs are used in many small planes, but more power is needed for larger craft. A possibility is Ford's 400-cu.-in. V8, shown being tested here by Geschwender Aeromotive, Inc., Box 5152, Lincoln, Neb. 68505. When turbocharged, such engines are capable of producing up to 1600 hp. Another possibility is Ford's little Pinto V4.



Small tiller with a big bite

Designed for handy use in back-yard garden plots, Gilson's new 2-hp Compact Tiller features a fold-up handle that lets it store in a small space, even fit in the trunk of a car (above). It weighs only 51 pounds, yet has 9-inch-diameter tines that bite through hard sod and soil, dig to a 6-inch depth. Tilling width is adjustable from 6 to 18 inches. Gilson Brothers, Box 152, Plymouth, Wis. 53073.



Darkroom advice on tape

Now you can do darkroom work easily and accurately as a friendly voice tells you exactly what to do and when to do it. The voice in the dark comes from a cassette tape, one of six new instructional recordings put out by Kodak. The timed, step-by-step tapes cover the processing of black-and-white film and prints, color slides, color negatives as well as several types of color prints. Sold for approximately \$6.90 each at darkroom supply houses. Kits of chemicals also available.

Presto—change your pickup into a dump truck

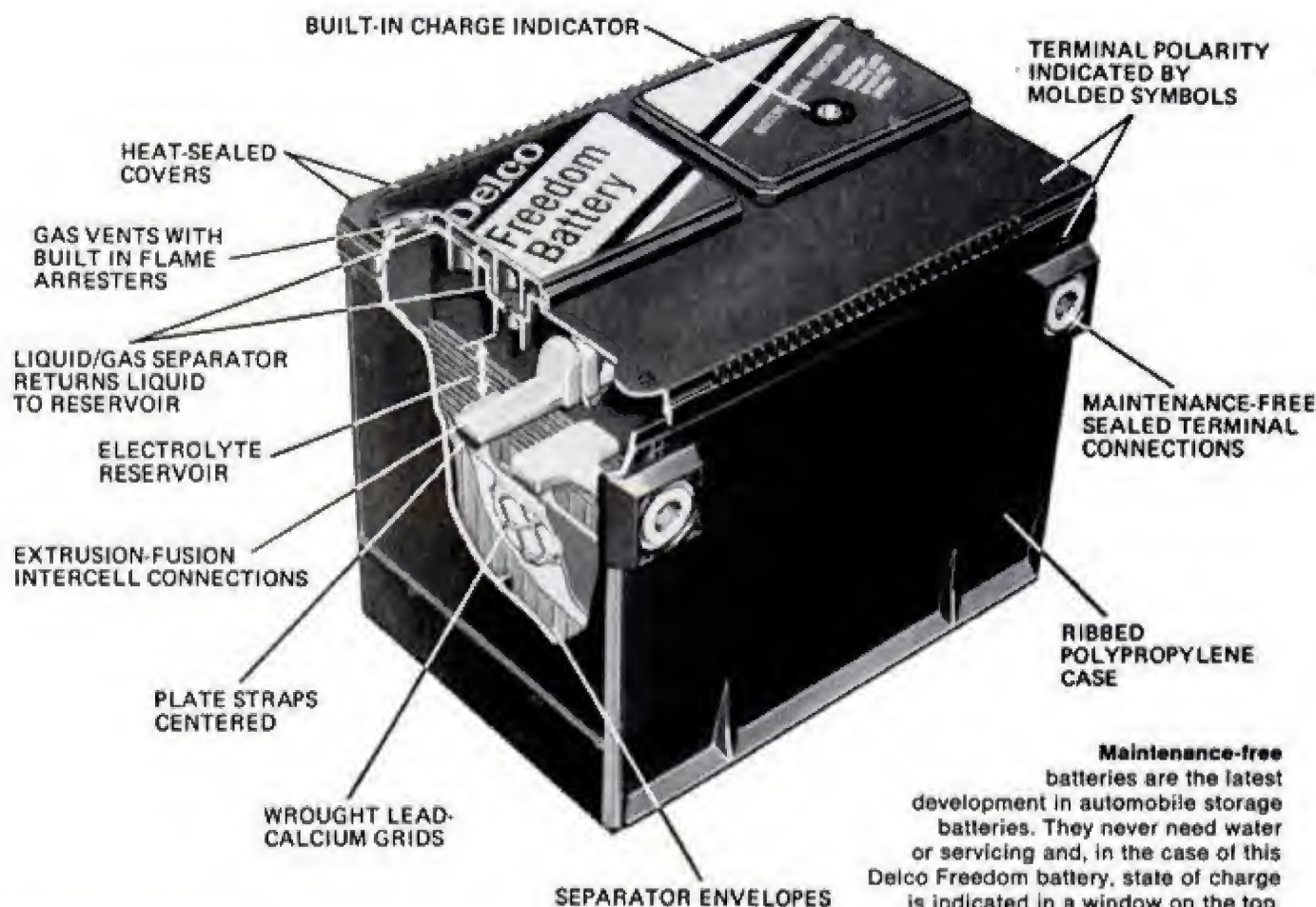
You can turn your pickup into a dump truck for fast unloading with this conversion lift. Called Jet Hoist, the electro-hydraulic unit fits most $\frac{1}{2}$, $\frac{3}{4}$ and 1-ton pickups without changing body lines. At the press of a button, the lift tilts your truck body to off load more than two tons in 15 seconds. Installation requires welding, but you can have this done at a welding shop or Jet Hoist dealer if you don't have your own equipment. Price not yet announced, but the accessory will be available soon. Truckers Supply, Inc., 1000 North First St., Garland, Tex. 75040.



All about batteries

How they work, how they're made, how to buy one and how to take care of it.

by Michael Lamm
WEST COAST EDITOR



Maintenance-free batteries are the latest development in automobile storage batteries. They never need water or servicing and, in the case of this Delco Freedom battery, state of charge is indicated in a window on the top.

Racing out the door that cold, blustery morning, you hop into your car, buckle up, hit the starter, and—nothing. No groan, no click, simply *nothing*.

Terrific. Dead battery.

Car batteries usually get sold in panic situations. You have very little time to think about or to choose what sort of battery you ought to get. You'll need a new one as soon as possible, sometimes within the hour.

Be ready to make a choice

This article is intended to prepare you for that critical, harried morning when you have to have a new battery right away.

After you've established that you really *do* need a new battery (keep in mind that plenty of other automotive ailments show the same symptoms as a dead battery), the buying scenario typically runs something like this:

You're late for work. You rush

down to the nearest filling station or store that sells batteries, and all of a sudden you're brought up short. Here are seven batteries on display, all in your group size, all fitting your car, all looking very much alike, all carrying different prices. Prices, in fact, range from \$20.95 up to \$52.95.

Why, you ask the salesman, does the most expensive battery cost more than twice as much as the cheapest battery?

"Warranty," replies the salesman—not because that's the real reason or the only reason but because "warranty" is the simplest difference to explain. The \$20.95 battery is warranted for 18 months, while the \$52.95 unit is guaranteed "for life"—as long as you own your car. Between these two extremes, you can buy batteries warranted for 24, 36, 42, 48 and 60 months.

Look for cranking performance

The question, then, would appear

to be, "How long do I plan to keep my present car?" Most people buy batteries on some quickly computed formula involving price and warranty.

Yet price and warranty aren't the important considerations. Much more important is a criterion most battery buyers haven't yet heard of, much less understood. It's called *cranking performance* or, in the vernacular, cold-cranking power.

Cold cranking ratings came into general use in 1972. These figures mean simply the number of amps the battery can put to your starter at zero degrees Fahrenheit.

Before you reread that sentence, think about this. As you're standing there in the store, noting that all those seven batteries in the display look alike, consider the difference in performance. On a zero-degree morning, the 60-month battery can shoot around 500 amps, to your starter. The 18-month battery delivers less than

half of that amount—say 240 amps.

The question now becomes, "How many cold-cranking amps. is my car going to need on the coldest morning of the year?"

If you drive a small car with a small-displacement engine, and if you live in a warm climate, the "18" will do just fine. But if you own a big American sedan with a V8, the "18" won't get you by, not even in sunny Florida and surely not in the chilly depths of the Midwest or Northeast.

How, though, can you actually tell the cold-cranking requirement of your car? Very simple. *Take your engine's displacement figure and match it with the new battery's cold-cranking rating. In cold climates, add 20 percent.*

That's the most important statement in this article.

Take this example. You live in Minnesota and drive a 1973 Torino with the 351-c.i.d. V8. You'll need a battery with a basic cold-cranking rating of at least 351 amps. And since you live in Minnesota, you'll have to add the extra 20 percent: 71 amps. In other words, ignore warranty and ignore price, but buy a battery with a total cold-cranking rating of not less than 422 amps.

Even if you plan to trade off your Torino in a year, you ought to choose a 48 or 60-month battery. Anything less powerful is very likely to leave you stranded the next time a cold snap hits. Only *after* you establish

your car's cold cranking requirement should you shop for warranty and price.

And watch for reserve capacity

Now there's another rating that helps tell you about a battery's performance. It's called *reserve capacity*. Reserve capacity is a number that tells you how many minutes your car can keep running at night if your alternator happens to go out.

The figure is calculated for an 80° F. night in which you need to run a 25-amp load: lights, wipers, other accessories, plus ignition. In other words, if a battery has a reserve capacity rating of 100, it means you can drive for 100 minutes on a balmy night without your alternator before the car quits.

There's no direct relationship between reserve capacity and cold-cranking performance, but they do generally go up together.

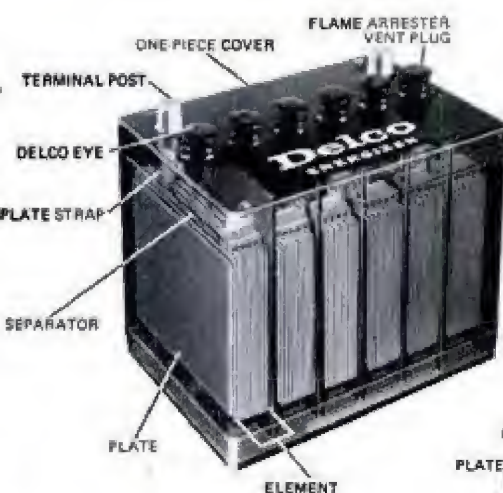
So now we've established four basic criteria you ought to weigh when buying a replacement car battery:

- Cold-cranking rating,
- Reserve capacity,
- Warranty and
- Price.

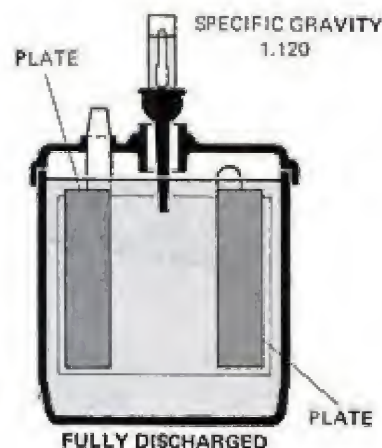
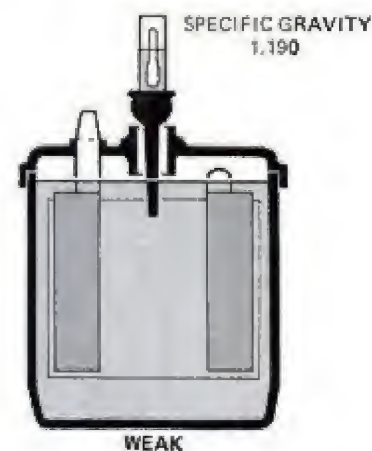
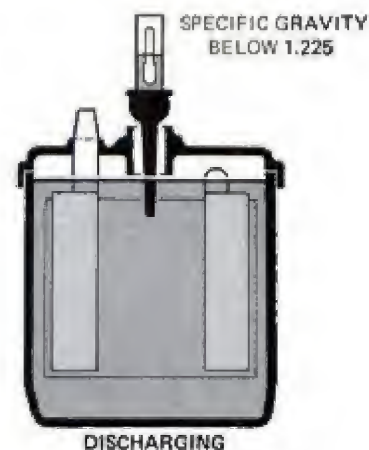
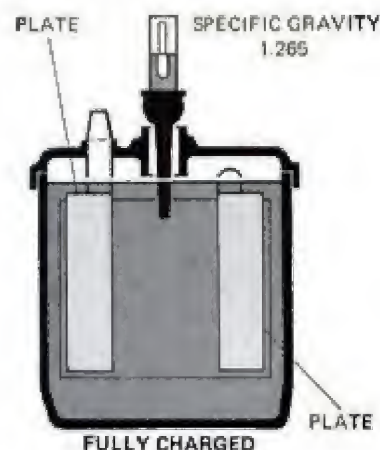
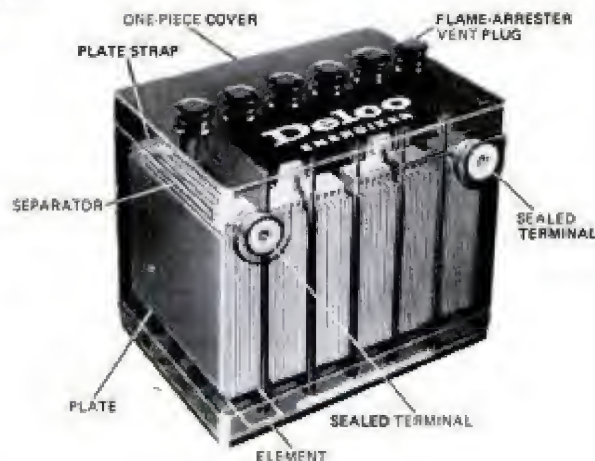
Of the four, the first and by far the most important is cold cranking. Remember to match it to your engine's cubic-inch displacement, and add 20 percent if you live in a cold climate.

Once you've set that, this figure will dictate warranty and reserve capacity pretty much automatically. If you think you'll keep your car longer than the cold-cranking rating dictates, by all means go to a more generous warranty.

The longer the warranty, of course, the higher the price in any given line. By and large, the major chain stores give the best prices. Next come the automotive supply stores, the filling stations and the new-car dealers. Even when you find yourself in an emergency situation, try to do a little



Familiar storage battery (above) has terminal posts. Fast disappearing, this type of terminal battery requires special care in servicing: Tools like clamp spreader and clamp puller are needed. Sealed, side-terminal battery (right) is now used in all new General Motors cars. Secure connection and less corrosion buildup on the terminals are big advantages.



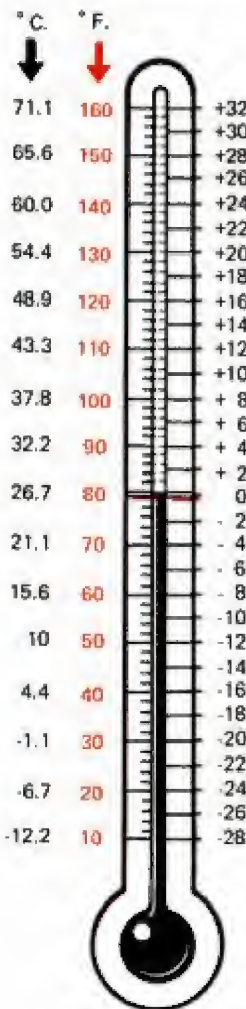
As battery discharges, acid unites with plates, leaving weaker acid solution; specific gravity drops.

comparison shopping by phone. Compare prices per cold-cranking ratings and warranty.

Warranties

I don't mean to imply that battery warranties aren't important. They are, but you have to see them in perspective. Battery warranties come in various forms. The most common warranty gives an initial free replacement period of 90 days. If a battery is going to fail from defects in materials or workmanship, it'll do it during those first 90 days.

After that, the rest of the warranty is broken down and prorated by months. For example, if you buy a 36-month battery for \$36, each month is worth \$1. If, then, the battery fails at 24 months, you can apply the remaining 12 months (\$12) toward another battery from the same store.



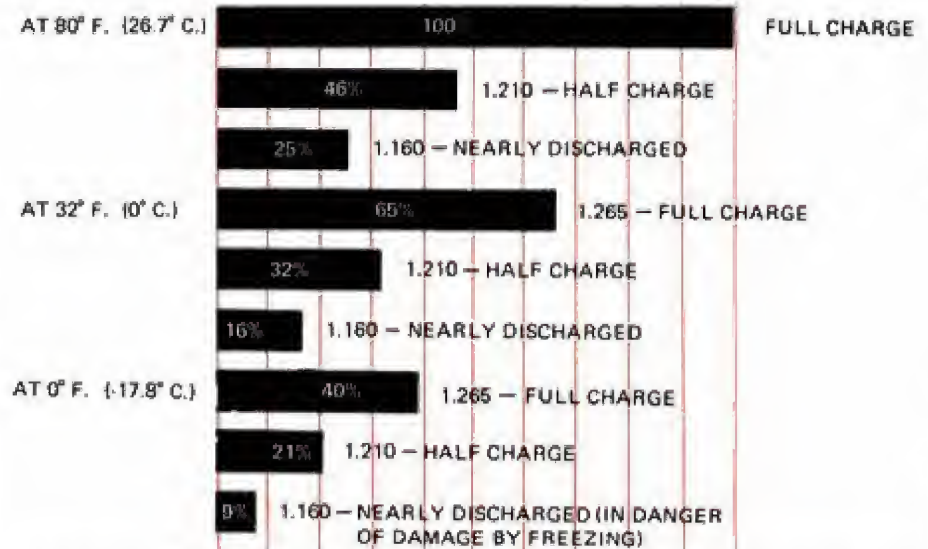
TEMPERATURE COMPENSATION OF SPECIFIC GRAVITY READING

To correct specific gravity reading as obtained on hydrometer, add .004 for each 10° F. increase over 80° F. Subtract .004 for each 10° F. under 80° F. Scale shows +.002 to +.032 and -.002 to -.028.

CRANKING POWER AS AFFECTED BY TEMPERATURE



CRANKING POWER AS AFFECTED BY CHARGE AND TEMPERATURE



Battery capacity is greatly reduced by cold as lower temperatures have numbing effect on electrochemical action. Drop from 80° F. to 0° F. leaves fully charged battery with only 40 percent of its cranking power.

Cranking power of battery is maximum at 80° F. and when fully charged. Note that at 0° F. even a fully charged battery has only 40 percent of its cranking power available—less if not fully charged, as shown above.

Note the obvious: Any warranty is only as good as the warrantor. Choose a retailer whose reputation and products you trust. Pick one, too, with a large enough network of cooperating dealers or retailers so you don't have to go back to that same store to collect on the warranty.

Many stores now market what they call "lifetime" batteries, which they warrant fully for as long as you own your car. You can't switch it from car to car or owner to owner, but if a lifetime battery fails before you get rid of your car, you bring it back and get another lifetime battery that's just like it.

Lifetime batteries can't, of course, last forever, as their makers freely admit. What they're banking on, though, is that you'll get rid of your car before the battery dies. It's a gamble. So, if you're planning, to keep your car longer than 60 months (five years), lifetime batteries can be a very good investment.

- They're all rugged and have high cold-cranking and reserve ratings.
- Some are less expensive than 48 and 60-month batteries from other

(Please turn to page 144)

BATTERY TOOLS

- Hydrometer
- Clamp spreader
- Post brush
- Clamp puller
- Battery lifter strap
- Petroleum jelly or protective spray
- ½-inch and 9/16-in. box wrenches
- Battery charger
- Load tester



Proper care of your battery requires that you have the right tools. Hydrometer (right) is basic for determining state of charge.

Back-yard fish farming for food and fun

by Gurney Williams



It looks like three greenhouses, but it's New Alchemy's fish farm at Falmouth, Mass. At right, researcher checks one of the breeding pools.



They call it a Mini-Ark because, like the Biblical Ark, it may help to keep us afloat—not in floods—but in a time of dwindling food supplies and an exploding world population. Actually, it doesn't look like an Ark at all. It looks more like three small greenhouses stepped down a hillside. Inside these strange, shedlike structures they grow fish.

Smile if you like, but this little back-yard fish farm designed and built by the New Alchemy Institute in Falmouth, Mass., on Cape Cod produces more than 100 pounds of good-eating fish a year. The fish grow to edible size on nothing more than algae and tiny water animals scooped free from local ponds. Aside from this, the Ark is a completely enclosed, self-operating system—in ef-

fect, a totally self-contained, self-sustaining environment. No fuels are used, and no pollutants foul the atmosphere. The sun heats the water in which the fish are bred, and wind power circulates the water through the system. Everything is free.

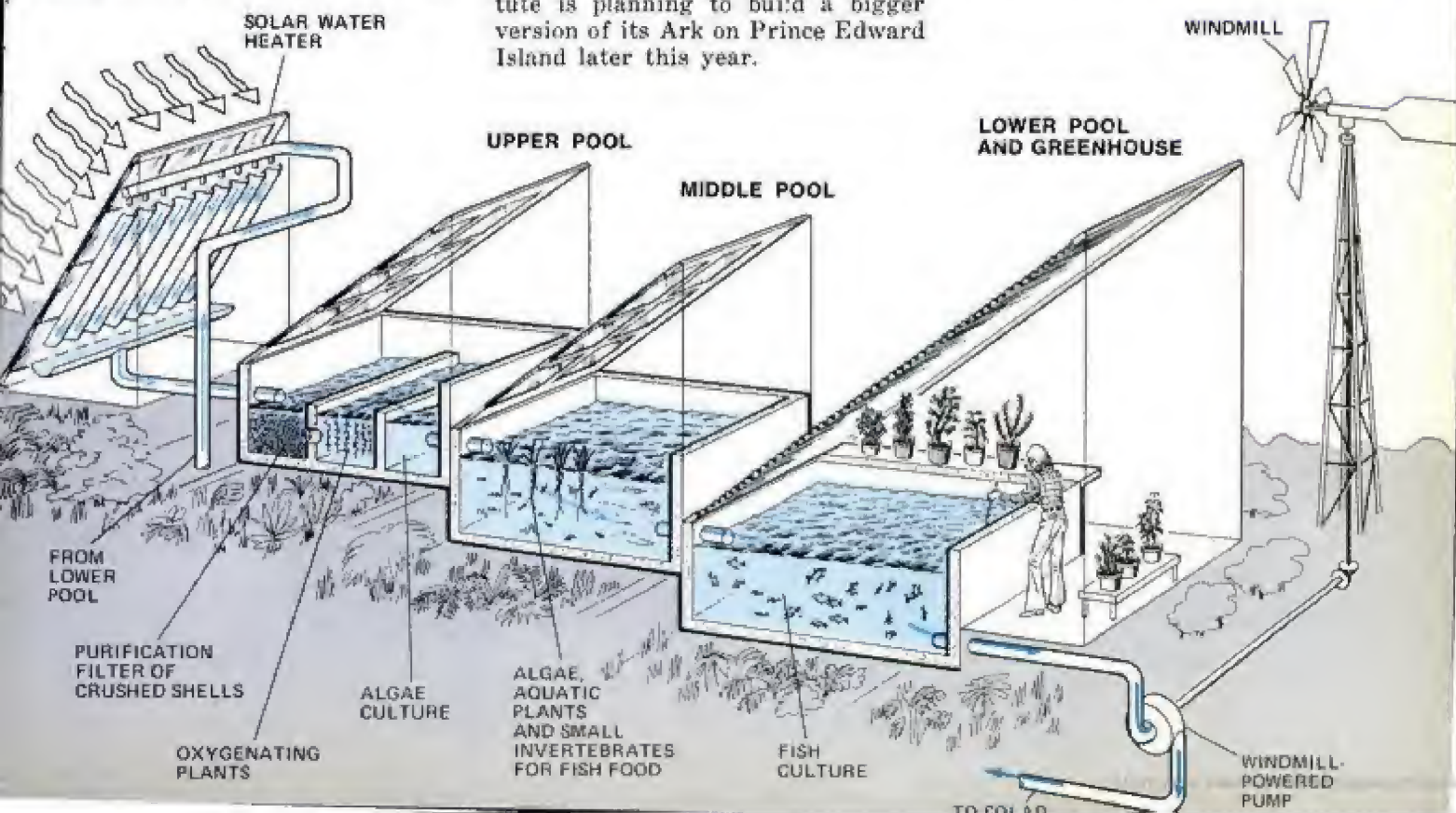
Not gold but just as good

Alchemists of the Middle Ages tried to turn base metals into go'd. The six-year-old, nonprofit New Alchemy Institute has no such visionary goal, yet what it produces does glitter—a bright hope for the future. The Falmouth farm is merely a small-scale prototype of what could be much larger Arks all over the world turning out substantial quantities of much needed good, healthful, high-protein food. Already the institute is planning to build a bigger version of its Ark on Prince Edward Island later this year.

Scientists at the institute built their Mini-Ark almost entirely of scrap materials and scrounged parts—old storm windows from house wreckers for their glass-roofed pools, discarded bathtubs for filtering tanks, an auto-engine crankshaft for the windmill drive. It took a lot of ingenuity and experimentation, but the project was fun—and paid off.

Basically, the system consists of a

(Please turn to page 146)





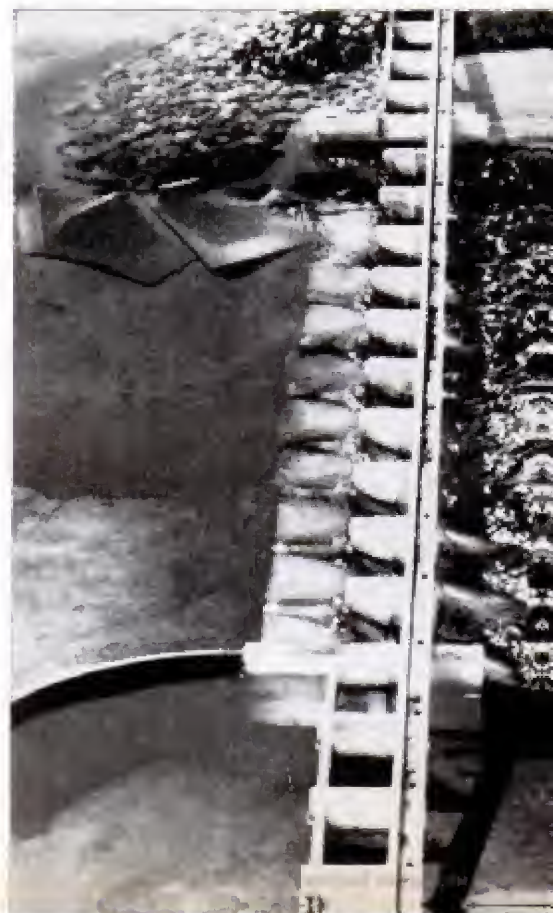
Strange wars are being fought by our Gulliver force

Using Lilliputian models and giant explosions, the U.S. Army Corps of Engineers is solving mysteries, testing theories and handling emergencies.

by Dan Fales
MANAGING EDITOR



A tidal model of New York Harbor (top) is used to study navigation, shoaling and environmental problems. During the 1973 flood, the Mississippi Basin model (above) was reactivated to predict flood problems. A new model (right) of the diversion structure was built and a quick-fix found for the failing wing-wall abutment protection shown at the top of the photo.





On a raw, rain-soaked afternoon, a scouting team suddenly found itself thrust into a strange battle. During a routine check of the massive levee along the frothing Mississippi River, the team came upon the sight they feared most. It was the ripping failure of a wing-wall abutment on a diversion dam that keeps the Mississippi from being captured by the nearby Atchafalaya River basin. It was April 12, 1973. The Mississippi was in flood, and the battle to save the dam was underway.

The diversion structure had been built to save New Orleans—not from floods, but from economic disaster. In 1952, the Mississippi had been in danger of breaking through to follow the channel of the Atchafalaya that runs eight miles west of the Old Muddy. If the hydraulics of both systems were left untouched, the Mississippi could have cut out of its present banks, leaving all downstream cities high and dry. This would include the world's third busiest port—New Orleans.

Corps moves to the front lines

As the wing-wall crumbled the word went out to hundreds of troops to mobilize and fight the swelling Mississippi. It was the U.S. Army Corps of Engineers that would do the fighting. Though not generally a frontline unit in the military, the Corps in this case became one.

As engineers arrived at the failing diversion gate, another group of engineers was reactivating a miniature model of the Mississippi River. The model is used to determine river reaction to different natural influences, including floods. Most of this work had been done over the years at a fairly relaxed pace. But now time mattered. Working around the clock, hydraulic engineers figured out on the model a quick-fix plan. Hoping they were right, the Corps started dumping tons upon tons of rock in a prescribed pattern around the failing structure. It took 16 barge loads, but the plan worked, and the Mississippi went right on rolling where it was supposed to roll.

Just one of hundreds of wars

Though dramatic, this was just one of hundreds of wars that have been waged by the Corps of Engineers. These are full-scale wars against such formidable enemies as pestilence, flood, hurricanes, congressmen, earthquakes, preservation-

Note truck size (top) relative to the giant explosion used to test the effects of underground explosive devices. Another "blow-up" (left) shows fly ash in concrete magnified 2000 times by an electronic microscope.



Vegetarian fish (above) are white amur to be used in planned attack on lake-clogging hydrilla. Testing effects of 1000-year storm will be done on model (below) of proposed atomic energy powerplant off New Jersey coast.

ists and the 1000-year storm. The weapons in these wars are not atomic bombs or doomsday machines. The weapons are men, specially trained and armed with facts, figures, computers and the brains to use them. The battlegrounds are in miniature and located at the Corps' Waterways Experiment Station (WES) in Vicksburg, Miss. The miniatures are exact scale models of actual sites. As on the tiny Lilliputian world of Gulliver, one heel step can crush a forest. But unlike *Gulliver's Travels*, an account of a Corps' battle reads like a chapter from *Future Shock*.

Worst possible storm in 1000 years

Right now, a team is studying the effects of the worst possible storm and accompanying waves that could occur in 1000 years off the coast of New Jersey.

Why? A breakwater must be designed to protect an atomic powerplant.

Teams are also working on the effects of earthquakes; on the use of fish to rid southern lakes of choking vegetation; on the building a miniature watershed to control a miniature lake. Another team has investigated the mysterious case of the failing concrete.

Still more teams are working on the Corps' No. 1 project—using dredge materials to build marshes.

And finally there are teams pushing the state of the art in weapons effects and explosive excavation.

And then there's the team working on the most adventuresome project of all—building the world's largest model. It's a 10-acre replica of the 64,170-square-mile Chesapeake Bay area. This model, located on the Bay itself, is even bigger than the five-acre Mississippi River model and the two-acre New York Harbor model. These massive and permanent models are used for ongoing studies to solve shoaling and navigational problems, determine the effects of new marine structures, detect the track of polluted waste and understand the natural factors affecting water quality.

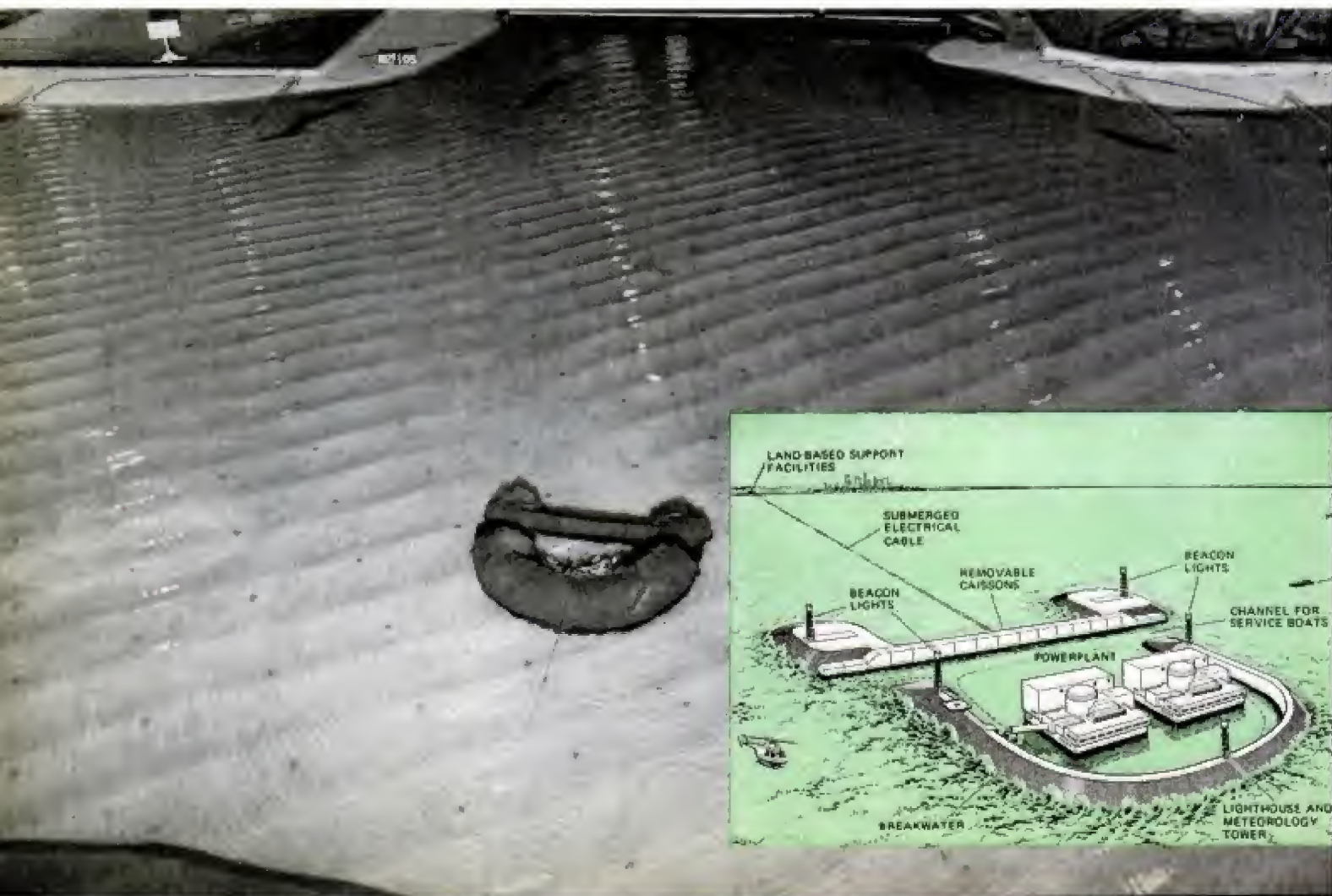
But the Corps works with smaller and temporary models, too. So it is with the project of the Public Service Electric and Gas Co. of New Jersey.

Atomic plant off New Jersey coast

Just off the coast in the Atlantic Ocean, PSE&G is planning to build an atomic powerplant that will supply the state with electricity. One concern is the structural integrity of the protective breakwater surrounding the plant.

To find out what's needed, the Corps was asked to build an exact scale model to test the effects of

(Please turn to page 154)



IT'S NEW NOW



Riding the rails—bicycle style

Today's thousands of miles of abandoned rail lines make ideal bike trails for seeing the country without fighting road traffic. William Gillum designed this outrigger so he could literally ride the rails without falling off. Those interested in doing the same can obtain information from American Railbike Assn., Box 9952, Colorado Springs, Colo. 80932.



Boat speedometer/odometer shows both speed and distance

Latest instrument for boaters not only shows speed, but also clocks how far you've gone—an important aid in navigating, racing and locating fishing and diving spots. Both readouts are digital and in 10ths of a mile. Distance is computed electronically from speed and elapsed time. \$450. Bay Laboratories, 20160 Center Ridge Rd., Cleveland, Ohio 44116.

Newest aerial target tracker sees all, knows all

The big "eyeball" under the nose of this Navy Intruder combines radar, laser imaging and FLIR (Forward-Looking Infrared) to track any target, visible or invisible. FLIR provides an actual image of the enemy—not just a radar blip—and videotape gives "instant replay." The ball swivels in any direction, can even "look back" to see if a target has been hit.



'Survival' rifle stores in itself

It's handy to take a rifle along when camping, backpacking or fishing in the wilderness, but conventional types are heavy and awkward to carry. This .22-cal. "survival" weapon breaks in two, the barrel and ammo clip storing in the stock. Disassembled, it's 16½ inches long and weighs 2½ pounds. Charter Arms Corp., 265 Asylum St., Bridgeport, Conn. 06610.

Have windmill, will travel

You can take this portable, foldup windmill on camping trips, mount it on a boat or in other remote locations for free electric power. The 9-foot-diameter propeller generates up to 500 watts of 12-volt d.c. depending on wind speed, has high-wind and no-wind safety features. Wind Wizard weighs 48 pounds, is \$695. Edmund Scientific, Barrington, N.J. 08007.



How to tell when you need a better camera

A better camera can make you a better photographer—but only if it helps you get shots your present camera can't take.

by Ivan Berger PHOTOGRAPHY EDITOR

The time to buy a new camera is when your present camera cramps your style—and not before. Within limits, the cheapest Instamatic, used with care, can shoot as good a picture as the most expensive Nikon, Hasselblad or Leica used with equal care.

But there are a lot of pictures that an Instamatic just can't shoot at all. And that doesn't just apply to simple cameras: The most expensive camera in the world will sooner or later stub your toe on its limitations (though often there's an accessory available to un-stub your toe, again).

Before you run off to buy a camera that will do more for you than your present one, make sure you need to do more. Here's a guide to what better cameras and their features can do for you, and to tell if you need them.

■ **Dim light is a problem** that most under-\$100 cameras cope with poorly, but which most over-\$150 cameras handle well. Under-\$100 cameras have "slow" lenses with apertures of about $f/8$ to $f/11$, which don't let much light in to reach the film. Better cameras have lenses of $f/2.8$, $f/1.8$ or faster, which let in at least eight times as much light, letting you shoot when it's eight times as dark.

Less expensive cameras may also have other dim-light disadvantages: Their shutters may operate no more slowly than $1/30$ or $1/45$ second (the more time the light has to reach the film, the more light will reach it). And if they only take 110 or 126 cartridge films, they can't use such fast films as Tri-X, which don't need as much light.

■ **Action foils the cheaper cameras, too.** Stopping action takes fast shutter speeds, which many of the least expensive cameras lack. Simplified electric-eye cameras may have fast speeds available—but their electric eyes are probably programmed to use those

(Please turn to page 160.)

RANGEFINDER
CAMERA



TWIN-LENS REFLEX



SINGLE-LENS REFLEX





Available light capability to shoot indoors without flash requires "fast" lens and ability to use fast films.



Time exposures lasting several seconds can yield night shots like this; shots lasting minutes can look like daylight.



Fast action requires fast shutter speed in situations like this to prevent blur. Speeds of 1/250 or 1/500 usually suffice.



35-mm negative size



Size makes a difference: 35-mm negative requires more enlargement (for the same size image) than 2 1/4-square, 120 image, and the difference shows.



2-1/4 x 2-1/4" (120) negative size

Sharper, crisper print from 120 negative is closer to contact-print size, hence closer to contact-print quality.



Wide-angle lens emphasizes perspective and has great depth of field as shown, lets you get wider area on film.



Long telephoto lets you shoot "close-ups" when you can't get close; compresses space between distant objects.



Macro lenses and a wide range of other close-up accessories (bellows, extension tubes) let you make small subjects big.

Boats '76

Performance rivals pretty looks in the new pleasure craft we pick as top '76 models.

Cars may be going compact, but on the water the new boats that set the trends are getting bigger. Not that there will be any shortage of little fishing skiffs this year, or canoes, dinghies, inflatables or folding models that beat fuel prices with power from oars and sails. But more builders are adding larger models to their lines. Unlike travel on land, a big boat usually offers more safety, plus accommodations and comfort.

It's true that more gas is required to push a large hull as a rule, but since pleasure boating is for fun there's no necessity to travel at full throttle or keep up to minimum highway speeds. The higher cost of gas has improved sailboat sales, yet power-craft purchases are going up as well.

Let's take a close look at the '76 boats from the bottom up. Hull styles vary from deep-Vs to flat-bottomed jonboats. The Vs may rock at the dock and worry your wife, but they can cut through heavy seas. The flat-bottoms and tri-hull types are more stable at anchor, but can pound when driven fast over rough water. On sheltered and shoal waterways, however, they are usually your best selection.

Check for generous hull flotation that will keep your choice upright and on top of the water no matter what. No craft is worth the money if it's going to drown you. Every hull must have enough flotation so it will continue to float with you and all your gear even after a following sea sloshes aboard and swamps it. Look for the capacity plate that tells what weight of passengers and equipment the hull can handle, and how much horsepower push you can safely use. Pioneered by the Boating Industry Assn., capacity plates this year are required on all new outboard boats under 20 feet that can mount motors.

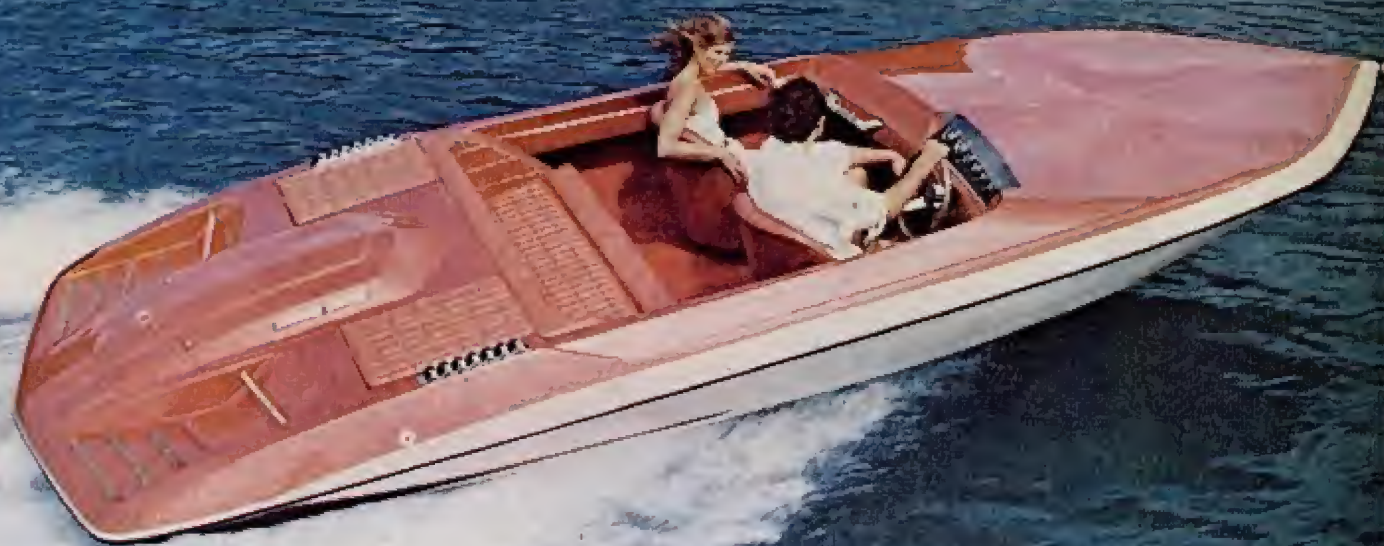
Your new hull this year will be of plastic (usually fiberglass reinforced), marine aluminum or possibly wood. All work well and will have long life if

by Bill McKeown
BOATING EDITOR



Cruising families and offshore fishermen alike have roomy new models from which to choose. Chrysler's Conqueror 21 (top) sports new "300" sterndrive using 265-hp V8 power. The Bayliner 2750 trailerable, twin-cabin express features the newly popular center cockpit (above). Wellcraft's 21-foot Nova Fisherman offers walkway around cabin.





Sleekest of slick new line of Glastron/Carlsons could be the CVX-20. Rated for up to 60 mph with 460-cu.-in. jet power, this ski boat features stripped decks with no windshield or cleats, red or blue metal-flake finish, seating for six. Other CVs are 18 to 26 feet.

Year of the classy performers

Newest of Seabird models, this 28-footer incorporates improved bottom design with luxury appointments. Jim Wynne deep-V hull has propeller pockets that allow lowering engines and moving them back with straighter shafts for better balance and performance.



Boats '76

built by reputable manufacturers; wood will require extra care and maintenance.

Above the waterline of the hull of your choice, the amount of top-sides (freeboard) can determine much of what your boat can do. The higher the sides, the bigger the craft as a rule, and the more big waves the sides can keep out. They also help keep youngsters and fishermen from falling overboard, but make it very hard for anyone



Style and speed are attractions of MFG Royal Caprice 19-foot stern drive Bowrider. Also available in cuddy, fishing models, it joins new MFGs to 25 feet.

First of the Glastrons to offer bowrider design with a deep-V hull, the new SeaRider V-195 with Merc or Glastron stern-drive, has stern ladder, optional hardtop.



Bass Runners from Chrysler now come in 15, 16 and 17-foot standard and professional models with added ice-chest seats for helmsmen, built-in live wells, platforms.

Large-boat styling introduced to outboard bowrider gives Wellcraft's Airstar 165 outboard raked side rail and windscreen lines of Wellcraft offshore Novas.



in the water to climb back aboard.

An excellent development is the assortment of transom platforms and swimming ladders you will see this year on many of the craft of our choice shown here. For safety, the engines should be shut off before a swimmer approaches the propellers, of course, except in the case of jet power. But used carefully, these features can be a great aid for water skiers and swimmers, and might also save a life.

During the last several years, the cockpit space of runabouts has been notably enlarged without increasing outside dimensions of the boats. Eliminating the foredeck and replacing it with extra seating provides much more usable passenger seating, and now there appear to be more bow riders around than decked-in sport models, though both are popular. The walk-through windshield with hinged center section makes passage for-

ward easy, but check the windshield installation to be sure it is secure—often the top of the shield is used as a grab rail for passengers boarding or leaving your boat.

Alternate excellent use of an open cockpit is the new variety of fishing arrangements. This year you'll find center and side-steering console designs in sizes up to 30 feet. Latest bass boats are adding additional wet and dry wells and

(Please turn to page 136)



Many builders are offering bigger models, and the new line-topper from Mirro-Craft, its Mariner Express Camper 21, has aluminum hull, fiberglass deck.

Bowrider stern-drive from Silverline with MerCruiser power rides on a tri-hull similar to new Kodiak Bass boat models, but flares gunnel into windshield.



Sailing workboat lines rendered into a 13-footer in plywood, the Mini-Indy by Peter Stevenson has the character-boat look of a Chesapeake Bay skipjack.

Convertible tops improve many models this year or change them into campers. Shown are a new Viking Sport Deck 16, with Aquasport 22-2 Fisherman behind.





PM drives a sportboat

This new high-performance hydrofoil really flies!

by Bill McKeown

Cross a boat with an aircraft and you get a waterborne flying machine that has been a tricky, flighty performer in the past. A few years ago we test-flew one with an elevator control column and rudder pedals like those in a plane.

But now Hydrofoils, Inc., in Red Bank, N.J., has engineered a simplified "sports car" model that has enough speed to fly just above the water without control complications. This craft has cornering

ability that should make the little boat suitable for race-course competition where the turns are tight and the water thin.

Hydrofoils' head, Ken Cook, has put into production a 16½-foot model with a trailerable beam of 8 feet with the foils up (13 when they're down); a draft of 36 inches that lifts to only 18 on plane; and the capability, Ken feels, of handling almost any marine powerplant around. In his Mirage prototype, he has a 350 Chevy running through a Casalle V-drive. He has gotten speeds of 60+ without ever fully opening it up.

Driving the Mirage proves Cook's theories. Once up and

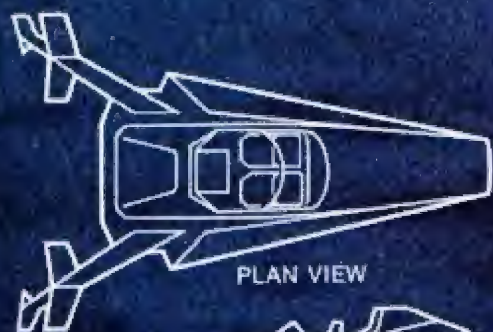
flying with an impressive rooster tail arcing out behind the surface-cleaving prop, the hull holds a safe level attitude without any need for the driver to adjust flight height or trim. Small wedge fins at the bottom of the aft struts act as rudders, and in demonstration runs, weaving between fish stakes like a slalom course down a narrow channel, the speedster maneuvered with complete and responsive control.

The present price of over \$13,000 for your own two-seater, ready to fly, is similar to sports car prices. But boatmen looking for fast, new action afloat may find this form of flying the answer. ★ ★ ★



Photos: Lorraine McKeown

on stilts



PLAN VIEW



PROFILE



STERN VIEW



Two-seat cockpit with bucket seats (above) follows sports-car design. Idling past channel markers, hull off-plane draws 36 inches, but can moor alongside floating dock. With bow lifted, it showed no tendency to trip while accelerating.

Level attitude of attack is described by designer Ken Cook (top) to PM's test driver McKeown. Aft struts in up and down position (shown in two photos above) reveal stainless lift discs and unique rudder wedges that tilt to provide light turning radius.

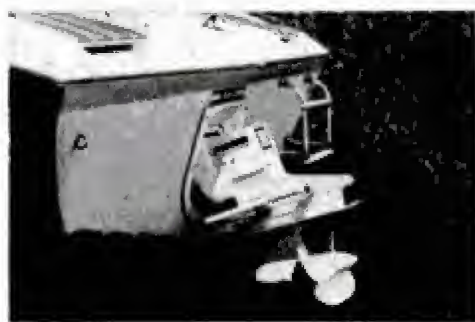


New push power—big and small

by Ray Gill



Brand new for pleasure-boat performance, extra-length Chrysler kicker (far left) can reach the water from tall transoms, has a convenient starter on top. Mercury's newest motor for fishermen (above) is a 4-hp, 36-pound lightweight. The streamlined Chrysler 300 sterndrive (below) is offered with five gas and diesel engines, uses an improved clutch, steering in 105 to 265-hp range.



Small engines used to be your only choice for small boats. But now that's changed. This year you can harness up to 200 horses outboard of your transom or three times that many per engine inside as a stern-drive or inboard engine. You can do all that if your hull can handle herds that size. Yet the small, light models are still the most popular. And if your hull won't handle it or if you aren't ready for Merc's Black Max 175, Johnson and Evinrude's 200s or Chrysler's 135, previewed here last fall, there are still fleets of new little compacts, engineered for more dependability and less gas consumption.

Which ones are best? Just about all the models with well-known names have been around long enough to have the bugs chased out, and even makes with "off-brand" labels have often been built by some of the larger companies. Here's one buying guide: Check with well-established local dealers who will handle servicing.

What are your choices? Here are a number of outboard makers, in alphabetical order, offering improved models. A letter to any of them can

usually get you the nearest dealer's name or a source for ordering.

■ **Two tiny outboards**, the AquaBug and the SuperBug, come from Aqua-bug International, Rockville Centre, N.Y. The 11-pound AquaBug weighs less than the two gallons of gas that could run it for 10 hours at top speed, 50 hours for trolling. This 1.2-hp single-cylinder model has a rewind starter and adjustable shaft for shallow running. The SuperBug, at about 18 pounds, claims up to 3 hp.

■ **Chrysler Marine's** extensive outboard line includes two new models developed especially for use as sailboat auxiliaries. The 10-hp model has Chrysler's Autoelectric alternator and Magnapower ignition with electric start. The 6-hp manual starts with a horizontal or vertical pull

Less weight, fuel and maintenance are providing more performance from this year's compact new mini-kickers and sterndrives.

from above, has increased reverse thrust for dockside maneuvering, and 20-inch lower units. Other models include 3.6, 5, 8, 10, 15, 25 and a brand-new 35.

■ **Smallest this year** from Clinton Engines, Maquoketa, Iowa, is the K-150 that delivers 1.5 hp from 14.5 pounds. It has a recoil starter, air-cooled power head and one-quart integral fuel tank. Other improved compacts include the 3.5-hp K-350 and the K-751 at 7.5 hp. Clinton's deluxe line offers 5, 7.5 and 9.9 hp.

■ **Eska Co.**, Dubuque, Iowa, enters this year's the-smaller-the-better contest with new features that include freshly designed swivel and transom brackets with heavy-duty clamps. All Eska motors also feature tilt-locks for trailering and a new shallow-water drive with pin for angle adjustment. Models include 9.9 and 15-hp liquid-cooled motors with solid-state ignition, preset carburetors for easier starting and fuel economy. Eska's two 7.5 air-cooled models offer forward, neutral and reverse shift or forward and neutral with full pivot. Also in the line are 5.5, 4.5, and 3-hp models with improved weedless propellers, Power Loop and drainless crankcase design.

■ **Evinrude's** new 9.9 and 15-hp twin-cylinder models have been fitted with new combustion chambers for smoother operation at slower speeds, plus new long fold-back steering handles. The new Evinrude 6 has carburetion, manifold, gear ratio and propeller changes. Top-mounted controls are available for sailboat outboard-well installation. Both the 2 and 4-hp models have been restyled, with the 4 also offered with optional "Fisherman's Drive" angled lower unit. Besides the 25, there is an all-new 35 that looks no larger than the previous 18, but turns out nearly double the push.

■ **No need to mix gas and oil** for the Honda B 75. This 7.5-hp, four-stroke mill has overhead camshaft, separate crankcase sump for oil with less air pollution claimed as one result, and a quiet and vibrationless operation reported by this Gardena, Calif., branch of American Honda Motor Co.

■ **The newly-designed Johnson 6**, from Johnson Outboards, Waukegan, Ill., claims a major increase in speed as a result of a new air intake system and manifold, redesigned carburetor and a combustion chamber that

also adds fuel economy. And Johnson also continues its extensive Sea-Horse line of fishing and small-boat motors with models that run from the 2 and 4-hp mini-compacts up through 9.9, 15, 25, to the mid-range 35-hp Sea-Horse.

■ For several years it's been rumored that Mercury, of Fond du Lac, Wis., had a new fishing motor in the works. Now it's here, weighing only 36 pounds, with integral fuel tank, twist-grip throttle and an engine cutoff switch mounted at the end of the tiller for added safety. The Merc 7.5, 9.8 and 20-hp engines are also available with optional electric start and an alternator to charge the battery. The new Merc 40 has two cylinders, and the one-cylinder 4.5-hp Merc 45 is in the line as well.

■ This year, the Ted Williams line of Sears, Roebuck outboards from Chicago will include an 11-pound, 1.2-hp model, a single-cylinder 3, a Model 5 of 4.5 hp, 5.5, one 7-hp and three 7.5 models, plus 9.9, 12 and 15-hp motors from which to select.

■ Ter-Mar Inc., of Lehigh Acres, Fla., has introduced its new Mighty-Mite II, a 1.7-hp, 17-pound offspring of the 35-year-old Mighty-Mite. This one has a new automatic recoil starter, water cooling, underwater exhaust, and standard as long-shaft models among the many improvements.

■ Additional small outboards of interest include a 35-pound, air-cooled 4-hp model from Aero Marine, Northridge, Calif.; workhorses of 2, 3, 4.5 and 5.5 hp from British Seagull, Irvine, Calif.; air-cooled Sea King fishing motors of 1.5, 3.5, 5 and three 7.5 models plus water-cooled 6, 7.5, 10, 15, 25 and 35 units from Montgomery Ward, Chicago. Sports-pal, Emlenton, Pa., offers the 11-pound, 1.7-hp Tas Mini air-cooled. Triton Industries, Portland, Me., has a 4, 5.5 and a 7.5-hp. Volvo Penta of America, in Norfolk, Va., is coming on strong in the outboard field as well with a 5.5, two 10s, two 14s and two 25-hp units in the lower-power



Among muscle midgets are flyweight mini models like the Mighty Mite, 1.7 hp at 17½ pounds; 3-hp, 18-pound Super Bug and 1.5-hp, 14½-pound Clinton (above). New 15-hp Eska (right) is one of seven water and air-cooled outboards.

category. And for the jet set, Otter-bine Industries, Malta, Ill., offers its unusual outboard jet drives of 2, 3, 5 and 7.5 hp.

Any boatman looking for plenty of power in a small package has a lot to choose this year.

Muscle for sterndrives

Both the big and small-capacity outdrives have been widening the spread of horsepower they can handle. This year it will range from 7.5 horses from gas and diesel mills up to 275 for standard rigs and 400 hp and more from racing mills like the Kiekhaefer Aeromarine K-Drive 400.

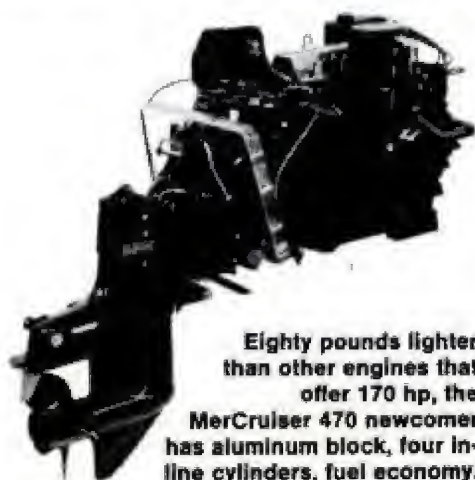
New gasket materials, plastics, alloys, plugs, liners and solid-state ignitions now make it possible for the good but earlier-designed engines to compete successfully with the recently designed models. In in-boards, there are several new V4s and V8s, plus package units for more powerful jet drives. Vee drives make possible placing engines all the way aft in suitable hulls.

Here, alphabetically, are some of the companies and their new developments.

■ Chrysler Marine, of Detroit, is introducing its all-new "300" stern-drive with clean new lines, extra-slim lower unit, cone clutch, special steering suspension system, and capacity for gas or diesel engines up to 275. It is available with the new Chrysler 195-hp V8, or 240 and 265 gas V8s or 105 and 130-hp diesels. A 155-hp Six and 225, 250, 280 and 330 V8s are offered in inboard and vee-drive models.

■ Mercury Marine is offering an all-new four-cylinder, 170-hp stern-drive engine with aluminum block, plus its 120 and 140 Fours and a

(Please turn to page 126)



Eighty pounds lighter than other engines that offer 170 hp, the MerCruiser 470 newcomer has aluminum block, four in-line cylinders, fuel economy.

Boats '76

New gear for your boat

Next best to a new boat is new equipment to update your old one. Many new craft also come at bargain prices which may mean most necessary accessories are missing. Either way, good assortments of innovative and improved marine gear are available for this spring.

Among the best add-ons for convenience and safety are transom steps and swimming platforms. Hand grips hinged to double as steps are sold by many marine supply outlets. Better still are bolt-on platforms now standard on many bigger boats—they could be lifesavers if someone falls overboard. For landing a gamefish, resting after swimming or reboarding with scuba gear, they are excellent, too. For fishing craft 20 feet or longer, there are install-it-yourself tuna towers. Cabin cruiser owners can buy prefab flying bridges.

Any boat with a battery aboard may now mount gadgets ranging from marine radios to radar. Even an outboard skiff can be operated more easily with electric anchoring and trawling winches, ski-tow retriever, trolling motor, burglar alarm, plus bilge pump and gas-fume sniffer. Fish finders, searchlights and CB radios with batteries are small enough to carry on and off a dinghy or canoe.

New deck fitting material

Strong plastics are important in modern marine hardware. Ruggedness and anti-corrosion properties no longer need mean heavy fittings that require constant polishing. Look for items that bolt on, however, and install them with backing blocks for added strength. One sign of short-cut marine construction is often screwed-on cleats, grab rails and even engine controls that can pull loose when needed most. Refasten them with stainless-steel bolts when there are rust signs or if screws are used.

Boats and trailers exposed to salt deserve additional attention, and flush-out fittings for sterndrives and outboards can be found in many marine outlets. Waterproof grease for outboard lower units and trailer wheel bearings is worthwhile.

Trim-angle adjustment for larger outboards and sterndrives has become a well-accepted accessory. A carry-over bonus from race boats, trim buttons now mounted on the hand throttle allow a smoother, more economical ride. ★★★

Hand-held radar that gives distances in digital readout and audible sound, the Sonic Eye weighs four pounds, runs off a 12-volt battery, indicates direction and closing or moving away of target by sonic pitch. Measures 50 to 1000 yards.



Demountable compass that can be stowed safely out of sight when not used, Ritchie Model 15 has sighting slot for use as hand-bearing compass. Built-in compensators and red filtered light are included. \$40.



EPIRB, the Emergency Position Indicating Radio Beacon, is recommended for any boat that cruises out beyond the normal range of VHF radio. Broadcasting on aircraft distress frequencies, unit alerts planes within 200 miles to notify Coast Guard of a call for help. The unit is waterproof, it has self-contained batteries and it sends automatically with a flip of the switch. Narco Marine EPIRB is about \$169.



Warmth while water skiing in cold-water seasons is possible with Johnson ski jacket or ski shortie from OMC Accessories. Made of 1/2-inch neoprene, suits for men and women have blue and white outer skin. Popular with small-boat sailors who must beat through cold spray. Available from Johnson dealers.



High and low-tide times from a self-winding watch are now possible with new Heuer Solunar model. Particularly useful for hunters and fishermen who plan outings according to lunar time, and boatmen on tidal waters, \$195 watch predicts tide height two weeks in advance.

Underwater radar is almost the result with new Wesmar SS80 Scanning Sonar. TV-type screen is reported to show fish as well as channels, obstructions and bottom structure, measured for distance, relative bearing, depth. Ranges of 50, 100, 250 or 500 feet can be selected, and the transducer remotely aimed for horizontal to vertical scanning. \$1200.



Kanoë Kaddy, made by Gagne Associates, reportedly lets one canoeist pull 160 pounds of canoe and gear on a woodland trail. The 22-pound Kaddy is \$50.

Trim control with self-adjustment. Leveline trim tabs from Olson Industries have stainless steel spring claimed to adjust tab to best angle for speed of boat. Model TT-1 (\$60 per pair) is for boats to 24 feet; TT-2 (\$80) to 35.



Float plan for valuables is possible with Evinrude Float Bags from OMC Accessories. In flat model for a wallet, boat registration, a radio/telephone license and other papers or wider model for camera and watch, vinyl-covered bags keep moisture out, have noncorrosive zipper. Evinrude dealers stock them.



So waterproof it can be mounted almost at water level for tube float fishing. Allied Sport's Humminbird Super Sixty has wide number-spacing for shallow bass fishing, reads to 60 or 120 feet. \$220.

Wind speeds of 5 to 70 mph are indicated on this WinDial Wind Speed Indicator from Airguide Instrument. No current or batteries are needed for \$19.95 unit.



(More boat gear on following page)



Two-way warning for three boating hazards is claim of S-1 Seaguard kit from Underwood Service Associates. A siren and a rotating beacon warn of high bilge water, fire or intruders. Kit with entry/exit delay is about \$190.

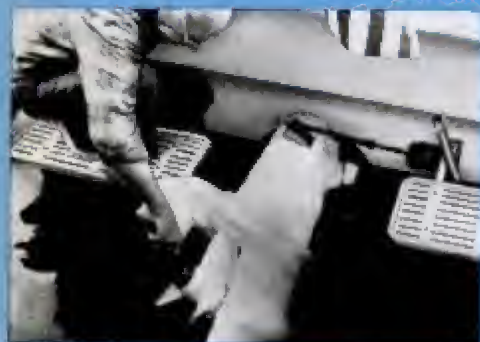
boats '76

boats '76



Bigger boats with more malfunction chances can play it safe with a TDT AutoWatch. Gasoline vapor buildup? Water in bilge? Engine heat up? Units can be wired to monitor 8, 16 or 32 problems.

Controllable pitch for outboard motor propellers is claimed for new hydraulic unit by Dirlik Marine Products. Dash dial adjusts blades from 14 to 26-inch pitch. Fuel economy is reported.



Steps toward safety, these stern add-on platforms are called Transom Decks by Bay Pattern Works. Mounted singly or in pairs, they aid swimming, skiing, skin diving, game fishing, prop repairs for any larger boat. Support arms adjust for level installation. Decks, \$69 each.



Life-preserver vests worth wearing all the time are by OMC Accessories through Evinrude outboard dealers. Camouflaged for hunter or pockeeted for fishermen, they adjust in size, are C.G.-approved.

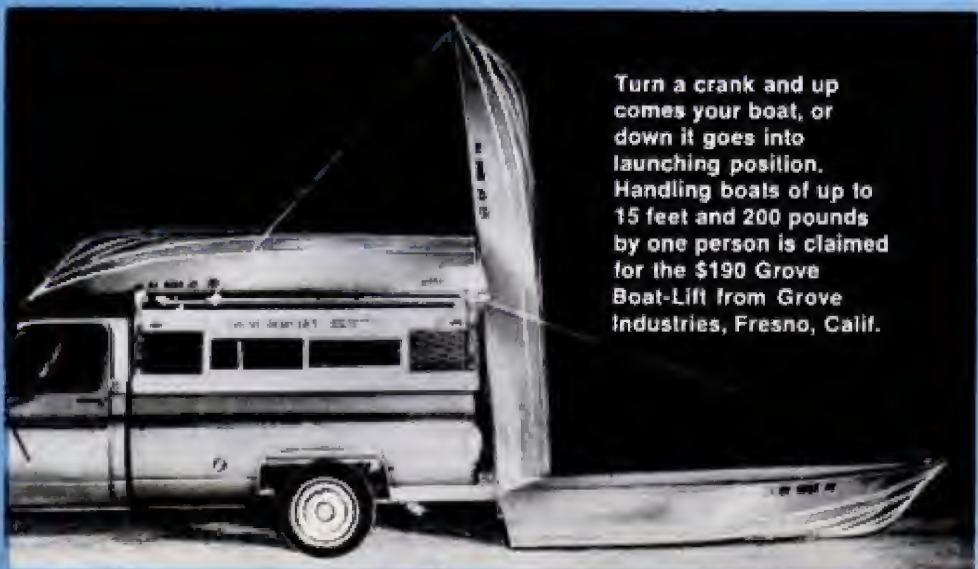
Pushbutton steering of small outboard is available for fishermen with Remote Con-Troll of Salt Lake City. With mount bracket and electric hand control, unit steers 7½-hp motors, or 15-hp outboards throttled down to trolling speeds.



Protection from road dust, and possible Projecting Load Law violation, is claimed for Prop Soc which fits over outboard or I/O. Made by Leaf Products.

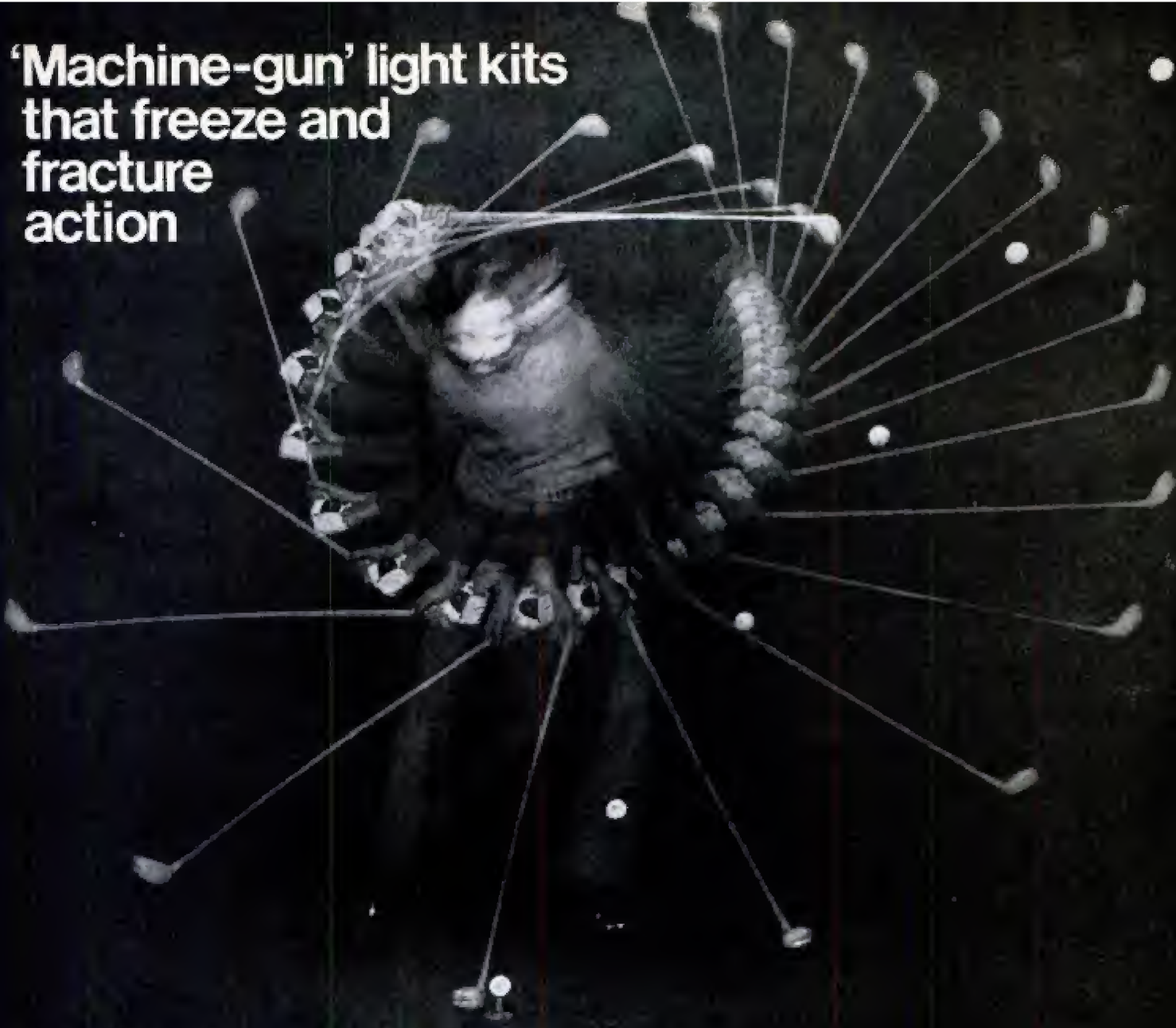


Freshwater bath for the inside of OMC Stern Drives is now available from OMC, Johnson and Evinrude dealers. Unit will flush out saltwater and silt or allow on-shore operation of engine for low rpm adjustments and tuning. About \$9.



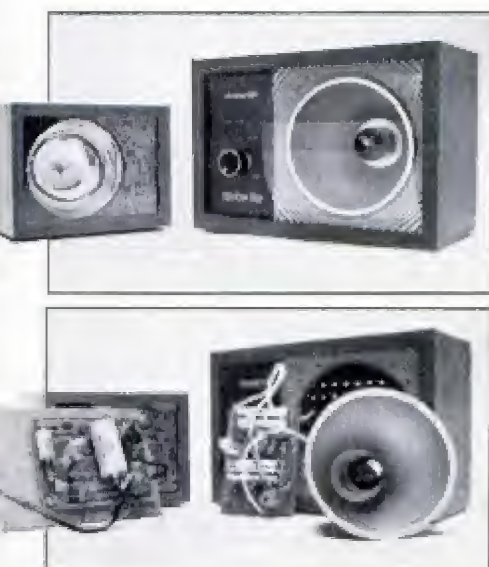
Turn a crank and up comes your boat, or down it goes into launching position. Handling boats of up to 15 feet and 200 pounds by one person is claimed for the \$190 Grove Boat-Lift from Grove Industries, Fresno, Calif.

'Machine-gun' light kits that freeze and fracture action



by Ivan Berger ELECTRONICS AND PHOTOGRAPHY EDITOR

Photo: Benn Mitchell



Rapid-fire repeating strobe lights in kit form include (top, left to right): Graymark 523-R and Radio Shack ArcherKit 28-3210. Inside views show simple construction.

Rapid-fire, repeating "strobe" lights are fantastic for visually freezing the action of rotating or reciprocating parts and for reducing other actions into overlapping slices to be seen and photographed. Now you can buy such lights in kit form at a modest cost—\$30 for Radio Shack's ArcherKit No. 28-3210, \$20 for Graymark's 523-R. You can build either in an hour or less.

It's a good thing the kits are simple, though, for the instructions aren't quite as clear as they should be, especially Graymark's—often where they can't be seen when you're working on steps relating to them.

Perhaps the most practical use for a repeating strobe is freezing action: Adjust the flashing rate so the moving part you're looking at (a fan blade, for instance) is always passing through the same position at the instant the light flashes. The part will seem to be standing still. We found

the ArcherKit better for this since it can be adjusted to flash at any rate from about 1 to 15 times per second; the Graymark's maximum speed is only about 5 flashes per second.

For photography, the advantage is reversed. We measured the Graymark's flash guide number at 12.5 and the Archer's at 8 for ASA 400 film. That means you can use it only for fairly close action with very fast film.

Some tricks to keep in mind when photographing with these repeating strobes: Use exposure time long enough to keep the shutter open the whole length of the action you're shooting—enough to catch several flashes. (The golf shot above, made with a professional repeating strobe unit, caught 25 flashes on the frame.)

Since the background of the shot will be exposed to every flash in the sequence, it must be as black as pos-

(Please turn to page 128)

What you should know before

They're expensive, heavy, less maneuverable, cost more to insure—but, boy, are they powerful, smooth and comfortable!

Big bikes are setting the trend. Motorcycles have matured from the short-hop, gas-stingy commuters of the early '60s into the superbikes and luxury tourers of the '70s. To many riders, high performance and comfort of the larger machines is what motorcycling is all about.

Big motorcycles generate a charisma—an image lacking in the smaller bikes. Aside from the head-turning appeal of massive engines and snappy styling, there's a certain inner satisfaction, even smugness, in knowing that the mere twist of the wrist can produce eyeball-sucking acceleration and speeds well over the century mark in a matter of seconds. And while wicking on occasion is undeniable fun, there's more to big bikes than just incredible speed.

The combination of long wheelbase and heavy mass goes far in smoothing out bumps and reducing fatigue. Motorcycles used to be considered either as sport or touring machines. The former usually had powerful but peaky engines and teeth-loosening, stiff suspensions for maximum handling. Touring bikes were relatively low on power, but compensated with more comfortable riding characteristics.

Big bangers for better touring

This distinction blurs with today's big-bore bikes, many of which combine the best features of both worlds. Compared to their teacup-displacement counterparts, the big bangers' stronger power allows higher gearing for lower cruising rpm. High engine rpm is a prime ingredient of fatigue. Greater engine flexibility also means fewer stomps on the old gearshift pedal.

When it comes to touring, there is no substitute for a well-engineered massive machine with lots of cubic inches. You could possibly travel coast-to-coast on something like a 175-cc bike, but you'd probably need a month to recover from the buzzing in your head.

Big-bike power is the only way to go for two-up touring. Large saddles minimize crowding, and the extra reserve of ponies make passing

safer. Fairings and saddlebags designed for the popular touring bikes add to the basic comfort. Fairings cut down fatigue-producing wind buffeting and offer some protection from the elements. Saddlebags are a neat way to store other weather protection and comfort items ranging from heavy underwear to rain suits. Saddlebags, windshields and fairings add weight and sometimes wind resistance to the bike. It takes power to overcome these culprits, and power is the big bike's forte. Many of these motorcycles come with high-output alternators that permit the installation of various luxury items from stereo radios and tape decks to accessory gauges and clocks.

Man-handling a monster

If heavy weight is an asset at speed, it is a liability at rest. Most large-bore machines (750 cc and up) check in around 500 pounds. (The Harley-Davidson FLH 1200 weighs close to 800 pounds), which means that unless you develop the knack of wheeling these monsters around, you're risking a trip to Hernia City. One method of snaking in and out of



BMW R90S, just under 500 pounds, puts out a strong 74 hp at 700 rpm. It's the most comfortable sports machine.

garages and parking spots is to sit astride the bike and paddle it around with your feet. It's easier to use the engine to move forward and foot-power for reverse. This assumes that you're sufficiently tall to generate the necessary leverage with your legs to push the bike around.

Some bikes, in addition to being long and heavy, are high. And if you belong to the short-leg set, you'll have to do your pushing by hand.

Stand on the left side of the machine a sufficient distance away so the bike will lean toward you. If you stand too close and the bike starts to tip away from you, there's little chance that you'll be able to keep it from falling over unless you hap-

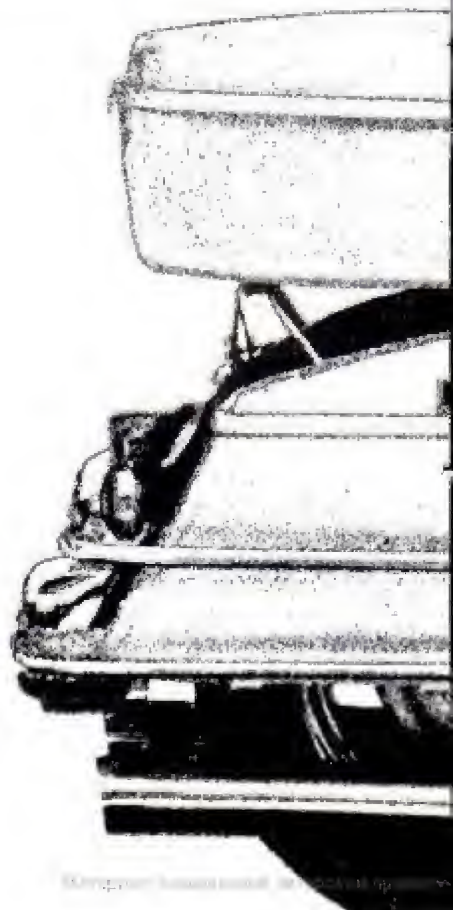
pen to be the Six Million Dollar Man. If you intend to roll the bike back onto its center stand and the ground is on an incline, have the rear of the bike facing downhill. When using the side stand, position the bike so it leans away from a downhill slope to reduce chances of it toppling.

How to hold it

If you angle-park at the curb on a crowned road or slight hill, let the bike roll back into the spot against the curb. This way you can drive out under power rather than trying to pull 500 pounds of motorcycle back up an incline. If there's no curb to prevent the bike from rolling, shift



Honda GL1000 Gold Wing is a whopping 650 pounder, and quietest of the big bikes. Like BMW, it has shaft-drive.



you move up to a big bike

by
Clifford
Gromer

the transmission into first gear and/or chock your wheel.

A recommended accessory for large motorcycles is a set of safety bars. This will protect your bike in case of a tumble and also keep the bulk of the bike's weight off your body in the event of a spill. The biggest hassle with a large, heavy motorcycle is wrestling it around. Once underway, almost all big machines quickly shed the feeling of heaviness.

Many riders move up to the big road-burners in stages, progressing from a 175-cc or 350-cc bike to a 750-cc or larger machine. While it's eas-

ier to learn riding basics on a smaller motorcycle, this is not essential. You can, under proper supervision, start your riding career on a big machine. The operating fundamentals are the same for all motorcycles. Uncle Sam has seen fit to standardize the location of controls and gearbox shifting patterns.

You'll find that compensating for the additional weight of a big bike is surprisingly automatic. If you normally ride to the limit, you'll find low-speed handling a bit more cumbersome. But what you lose by not being able to whip through sluggish traffic like a strand of buttered spaghetti

is compensated by increased stability on the highway. Once you get the hang of it, you'll find most big bikes really are nimble.

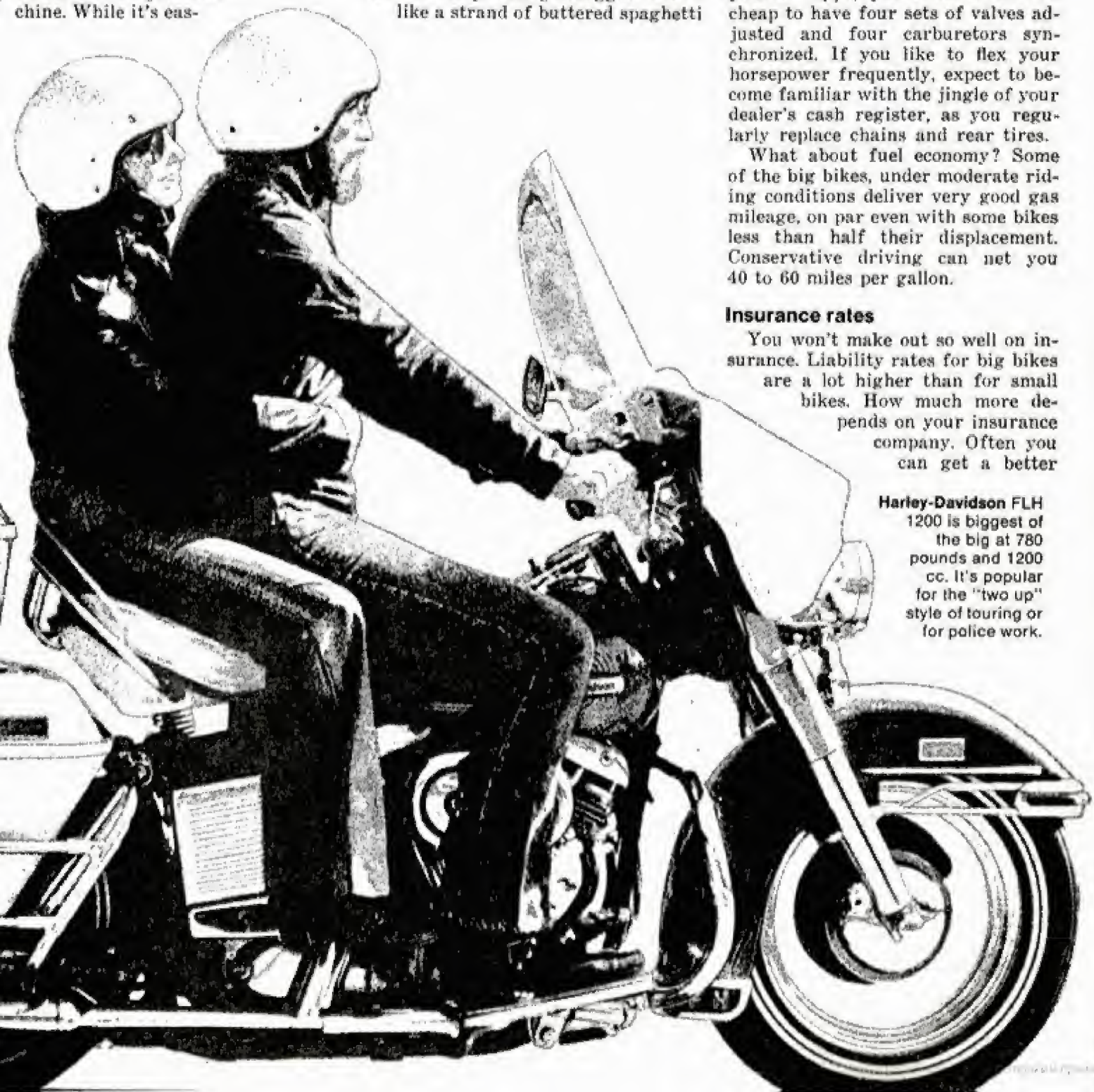
While there is much similarity in riding large and small bikes, there are differences between the two in other areas. Big bikes generally use heavier parts, which means you'll be shelling out more should you require a trip to the parts counter. Normal maintenance also may run higher. A four-cylinder engine has twice as many sparkplugs to replace as a twin. And if you are not the do-it-yourself type, you'll learn it's not cheap to have four sets of valves adjusted and four carburetors synchronized. If you like to flex your horsepower frequently, expect to become familiar with the jingle of your dealer's cash register, as you regularly replace chains and rear tires.

What about fuel economy? Some of the big bikes, under moderate riding conditions deliver very good gas mileage, on par even with some bikes less than half their displacement. Conservative driving can net you 40 to 60 miles per gallon.

Insurance rates

You won't make out so well on insurance. Liability rates for big bikes are a lot higher than for small bikes. How much more depends on your insurance company. Often you can get a better

Harley-Davidson FLH 1200 is biggest of the big at 780 pounds and 1200 cc. It's popular for the "two up" style of touring or for police work.



deal on your insurance if you go through your auto broker. The problem is that many auto insurance companies do not like to write motorcycle insurance. You usually end up with a company specializing in bike coverage. Aside from higher liability rates, comprehensive (fire and theft) coverage also is more expensive because large bikes are worth more than small ones and tend to get ripped off more frequently.

Here are the comparative yearly rates charged by Midwest Mutual Insurance Co., a motorcycle underwriting specialist:

State	Engine Size	Minimum Liability Coverage	Liability + Comprehensive Coverage
Iowa	175 cc	\$24	\$65
	750 cc	48	204
	1000 cc	50	322
California	175 cc	55	117
	750 cc	140	279
	1000 cc	150	396
New Jersey	175 cc	70	132
	750 cc	130	310
	1000 cc	145	452

Two-cylinder models

If you're interested in a big bike, you'll find quite a variety to choose from. Consider the possibilities of engine design, for example. If you're a traditionalist and go for the "classic" vertical twin four-stroke, there's the Norton 850 Interstate tourer or the more sporty Commando in the roadster model.

It will be touch and go for a while to see if this last vestige of the once-mighty British motorcycle industry can survive. New models may be attractively priced, but if the company goes under, parts eventually will become scarce.

If you like your twin in a Vee configuration, Harley-Davidson mounts its one cylinder behind the other in the FLH 1200 and 1000-cc Sportster. With an uneven firing sequence, Harley's exhaust note is considered by some to be positively erotic. If you're not partial to a fore-and-aft Vee arrangement, Moto Guzzi offers an alternative by placing the cylinders on its Vee twin side by side, so the engine appears to be growing out from underneath the gas tank.

The only other way you can arrange two cylinders is to have them positioned straight out, 90° to the bike. That's exactly what BMW's been doing with its motorcycles for the past 50 years. BMW's opposed twins with their traditional shaft drive possess legendary smoothness and durability. BMW is more per-

formance-oriented these days with its 900-cc sport and touring models.

Three-cylinder jobs

If exotic machinery turns you on, Suzuki has a pair of bikes that should do the trick. Its 750-cc model is a reasonably priced three-cylinder, water-cooled two-stroke. The bike, with a very effective dual-disc front brake, has established itself as a reliable tourer.

The Rotary is Suzuki's "big gun." With an inherently smooth engine and excellent handling, it should appeal to those who want "something different." The design has not produced problems, but a malfunction on the road could leave you wondering.

If triples are your thing, but you prefer the four-stroke variety, there are two bikes you can choose from: Laverda produces a 1000-cc machine that mates a 90-hp bulletproof powerplant to a superbly handling frame. The \$4000 price tag might make you flinch, though.

Yamaha, after being out of big-bore action for a while because of a trouble-plagued 750 twin, has a brand-new entry. It's a shaft-drive, 750-cc, four-stroke triple with factory mag wheels and disc brakes front and rear.

Four-cylinder bikes

Motorcycle engines boasting four cylinders have been around since the '30s, but the design lay dormant for many years. Honda revived the arrangement in 1969 with its very popular 750 Four. The motorcycle, originally introduced as a touring superbike, was redesigned last year as a sport model featuring 4-into-1 exhaust pipes and very accurate handling.

Taking over as the top-of-the-line Honda is the 1000-cc Gold Wing shaft drive with a water-cooled opposed Four. Looking somewhat like a VW engine without fins, it sets a new standard for highway touring comfort. Exceedingly quiet, it is virtually vibration-free. When fitted with an accessory fairing, the Gold Wing closely approximates a two-wheeled automobile. Its only drawback is annoying idiosyncracies in city traffic due to excessive driveline play and a 640-pound weight.

Kawasaki rounds out the field with its famous vertically arranged four-cylinder Z bike designated the KZ900 for 1976. It created a sensation when first introduced in 1972. With the strongest acceleration capability of any production motorcycle, the Z is very docile and tractable around town. The Z's split personality is the closest thing to that happy situation

of having your cake and eating it, too.

Prices for the big bikes range from the low \$2000s all the way up to four big ones, with the majority clumping in at \$2500 to \$3000. If you're thinking that's what a car costs, you're right. That's what cars *did* cost—three years ago. Besides, no car can come close to equaling the excitement and freedom of a big bike. ★★★



Suzuki 750 is water-cooled, two-stroke triple that weighs in at 550 pounds. In full touring trim, as shown here, it's closer to 600 pounds. Fairing makes long-distance touring much less fatiguing.



Honda GL1000 Gold Wing can be set up for comfort. The "dashboard" here features extra instruments, stereo radio and digital-readout alarm clock.



Kawasaki KZ900, quickest of superbikes, has 76 hp at 8500 rpm, weighs over 500 pounds. Quarter-mile times are between 12-13 seconds. Fuel tank holds 4½ gal.

IT'S NEW
NOW



Strap-on snow 'chains' take only minutes to install

These emergency snow cleats can be slipped on a tire without your having to jack up the car to get unstuck from a ditch or drift. The metal links are strapped on through slots in the wheel hub and pulled taut with a lever-locking buckle, taking only minutes to install. Sold in pairs, they're \$6.98 postpaid from Stock Sales Co., Box 606, Mineola, N.Y. 11501.



New TV table tennis game

If there's nothing good on TV you want to watch, just tune in a vacant channel and play your own game of "TV pong." This new, more sophisticated version of TV table tennis hooks up easily to any black-and-white or color set. It features a varied automatic serve, a "pong" sound with each hit, a paddle that can angle the ball to either side of the court and a digital display of the score on the screen after each point is made. The twin-knob control console (foreground at left) is a separate unit that can be placed up to several feet from the set. The accessory sells for just under \$100 from Sears.

Quick electrical fix kit

This handy electrical repair kit includes an assortment of 26 insulated crimp-on terminals and wire splices and a multi-purpose tool that cuts and strips wire, crimps terminals and shears bolts. The vinyl case contains instructions for using crimp-type terminals and splices and folds to a compact 3 by 8½-inch size. Kit is \$9.40 postpaid from AMP Special Industries, Box 1776, Paoli, Pa. 19301.



New twists in screwdrivers

These finely crafted cabinetmakers' screwdrivers feature flat shanks for a wrench when more torque is required and oval wood handles for a better grip than the conventional round type. Set of six in 3, 4, 5, 6, 8 and 10-inch sizes is \$18.80 postpaid. Woodcraft Supply Corp., 313 Montvale Ave., Woburn, Mass. 01801.



Fireplace heat saver

Waste heat that goes up the chimney is captured by this blower-powered exchanger and circulated through the room to add warmth and save fuel. Can be installed in any freestanding fireplace or stove using exposed circular flue. Sizes fit 6, 7, 8 and 9-inch-diameter pipes, \$89.95. Calcinator Corp., Bay City, Mich. 48706.

Compact car cooler

Ideal for snacking on trips, this slim, compact, insulated food carrier is designed to fit on a car seat between passengers. Called Sidekick, the 9¼-inch-wide portable cooler holds 12 12-ounce beverage cans as well as sandwiches or other food, keeping them cold six to eight hours. About \$9 at housewares, department stores. Rubbermaid, Inc., Wooster, Ohio 44691.



It's not a hit and miss job—you need an orderly, logical approach.

“Where do I start?” That's a question do-it-yourself—and even professional—mechanics ask themselves when faced with troubleshooting engine misfire.

You start by defining misfire, putting the problem in perspective so it doesn't seem overwhelming.

Engine misfire occurs when the fuel charge in one or more cylinders fails to ignite. The condition generally results from lack of spark, a fuel-system problem that results in an excessively lean or rich fuel charge, or internal engine damage.

Misfiring wastes gasoline, causes a loss of power and increases exhaust emissions. An engine can misfire at idle or running at slower speeds, at higher cruising speeds (no load), or under load (hard acceleration or a tough pull up a hill).

What causes misfire?

To judge whether an engine is missing, warm it up. A cold engine frequently doesn't run smoothly, only because it is cold.

Engine missing makes the car kick or lope every time the affected cylinder (or cylinders) skips a beat. To uncover the reason, check the following in the order given:

1. Remove the carburetor air cleaner and examine the filter element. Replace the filter if dirt-clogged.

2. Examine the choke butterfly plate with the engine warmed up. The plate should be wide open.

If partially closed, free the plate by cleaning choke linkage and applying carburetor cleaning solvent to the plate's pivot points. If the plate doesn't function now, the trouble is a misadjusted choke or a bad part in the choke system.

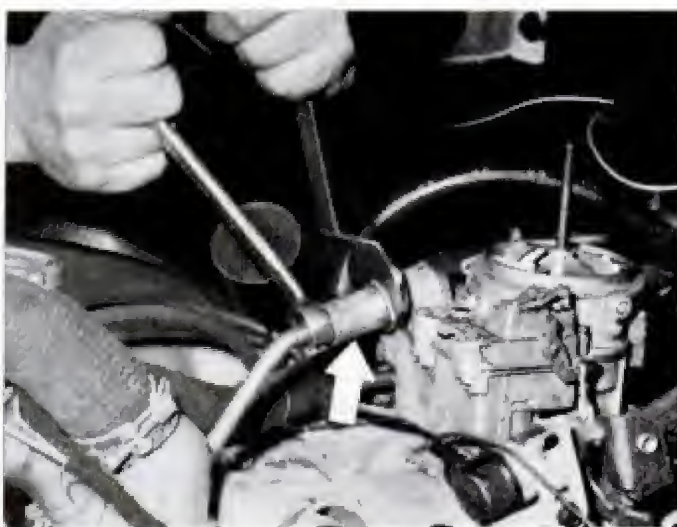
3. Look down the carburetor barrel and move the throttle lever by hand once or twice. Gasoline should squirt forcefully into the carburetor. If it doesn't, odds are the fuel filter should be replaced.

4. Two types of fuel filters are used. Most GM and some Ford Motor Co. models have the filter positioned inside the carburetor inlet. Most AMC and Chrysler Corp. cars, and other Ford models, have the fuel filter visible in the fuel line between fuel pump and carburetor.

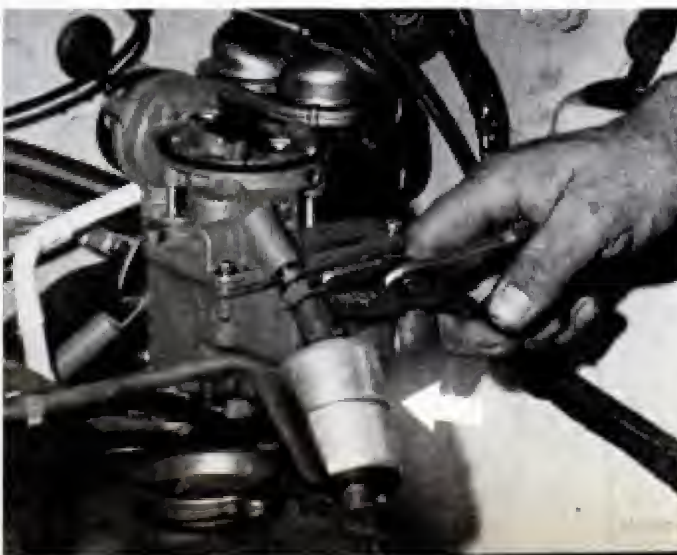
If you're dealing with an internal

Tracking down engine misfire

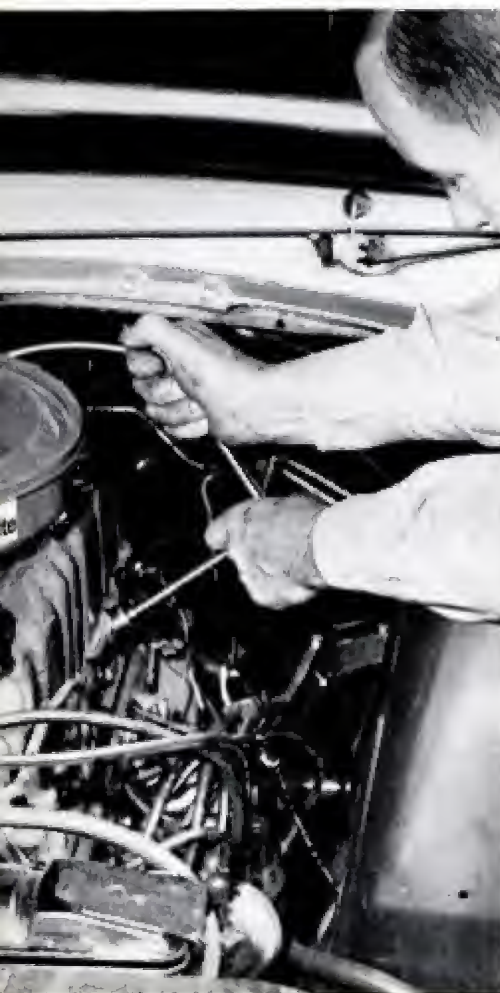
by Mort Schultz



To find the cause of engine misfire, start with the easy things to check and work your way up to the more difficult. Check the air cleaner on carburetor, replace if dirty and clogged.



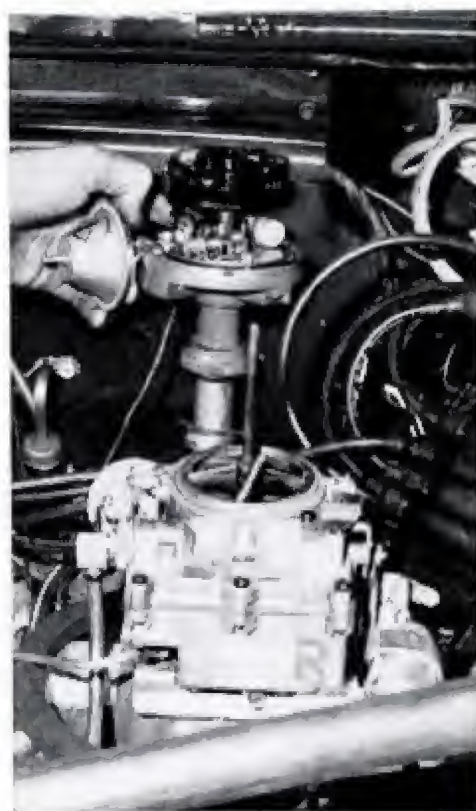
Check the fuel filter, replace if dirty or crimped. Fuel filter (left) is found at the carburetor inlet. Other type (below) is found in line between fuel pump and carburetor. Most GM and some Ford models have filter in carburetor inlet. Other Ford models and most Chrysler and AMC models have filter in exposed area between fuel pump, carburetor.



Remove sparkplugs. Check wide gap, electrode deposits, worn electrodes, damage.



Time ignition system. If timing cannot be set, suspect the distributor, assuming that breaker-point dwell is set correctly.



Remove distributor and check for worn distributor shaft.

now strong. If not, the carburetor probably requires cleaning.

To try to avoid a big job, you first attempt to restore the carburetor by using a commercially available carburetor cleaning kit. It contains a can of carburetor cleaning solvent and a tube that attaches to the carburetor inlet.

With the engine running, the cleaner flows into the bowl, through the needle valve seat, through passages and into venturis through jets. If the carburetor isn't too badly clogged, the method should work.

If it fails, you'll have to disassemble the unit, clean it by letting parts sit in a tub of cleaning solvent, install replaceable parts from a rebuild kit which you can buy at an auto parts supply store for your model of carburetor, and make such internal adjustments as float level and accelerator pump stroke.

6. Speaking of carburetor adjustments, it's possible that if your engine-missing problem is occurring at idle it's being caused by an incorrect slow (curb) idle-speed adjustment. Connect a tachometer and get the correct adjustment specification which, if your car is a '68 or later model, is given on a decal in the engine compartment.

If your carburetor is equipped with an idle-stop solenoid, idle speed is adjusted by turning the adjusting nut on the solenoid. If the carburetor has no idle-stop solenoid, the adjusting screw will be found protruding from the carburetor.

7. Missing at idle and slower speeds is frequently caused by

filter, let the engine cool and place a rag under the fitting to absorb gas that may drip. "Break" the connection, removing the fuel line and retaining nut. Take out the filter (paper or bronze) and the spring behind it.

Replace a paper element. Clean a bronze filter in kerosene or carburetor cleaner.

Install a new or cleaned element, using the old spring, and reattach the fuel line tightly.

If your car uses a visible inline fuel filter, wait for the engine to cool. Using pliers, slide off retainers holding the filter to the fuel line. Pull the filter from place and install a new one.

5. Activate the throttle lever by hand again and see if fuel flow is

vacuum loss around the carburetor-intake manifold joint. Prepare a mixture of one part SAE 20 motor oil and one part kerosene. Pour the mixture into a squirt-type oil can.

With engine running, spread the mixture around the joint. If idle smooths out (the mixture may be pulled into the joint), tighten carburetor mounting bolts and test again. If missing prevails, replace the carburetor mounting gasket.

8. Another cause of engine missing at idle and slower speeds is a vacuum leak in the crankcase ventilation (PCV) system. Start the engine and remove the PCV valve from the rocker arm or valve cover. Hold your thumb tightly over end of the valve. You should feel very strong suction. If suction is weak or doesn't exist, examine PCV hoses for cracks. Replace a bad hose and retest. If vacuum is still weak, re-

stops, the trouble is likely a leaky EGR valve diaphragm. Replace valve.

10. Examine each high-tension cable closely (all cables from distributor to sparkplugs and the distributor cap-to-coil tower cable). If insulation is cracked and brittle, replace all cables.

11. Take off the distributor cap, wipe it clean inside and out, and inspect it for cracks. A carbon path along the cap signifies a narrow crack. Replace a cracked cap.

Examine terminals inside the distributor cap for carbon that signifies arcing and the fact that cables weren't seated firmly in the distributor-cap towers. Clean terminals; if they are badly burned, replace the cap.

12. Remove the rotor from the distributor, and inspect it for cracks and an eroded terminal. If the ro-

tor is damaged, you should replace it.

13. Make sure distributor breaker points are properly aligned, with one point meeting the other squarely.

14. Test spring tension of the movable distributor breaker point by attaching a spring scale to its arm and pulling with a smooth motion. The breaker point should part company with the stationary point when the scale reads 17 to 21 ounces. If this requirement is not met, replace points. Weak tension causes point bounce, causing a misfire at higher speeds.

15. Condenser connections should be attached firmly to the breaker points.

16. Button up the distributor and connect a dwellmeter/tachometer. See that distributor point dwell is adjusted to specification (check the decal).

Note: Cars with electronic ignition do not have distributor breaker points, so you guys can forget about checks Nos. 13 through 16.

17. Remove and examine every sparkplug. Fouled, cracked, worn or improperly gapped sparkplugs are a major cause of engine misfire.

18. Test the engine for compression. If you find compression in one or more cylinders about 70-percent lower than that of the highest-reading cylinder, pour some SAE 20 engine oil into the cylinder and test again. If compression does not improve, missing is being caused by defective valve(s) serving the cylinder, such as a weak valve spring or a burned valve. Internal repairs are needed.

19. Reinstall plugs and connect your timing light. See that ignition timing is set to specification.

If you can't set timing properly, the distributor may have a worn shaft or a camshaft lobe may be worn. In any event, you have at last found the cause of missing.

20. If everything to this point checks okay, and the engine misses at higher speeds or under load, suspect that the ignition coil is breaking down under load. You can't test a coil unless you have an ignition-coil tester. Even then, you might not get a positive answer, since this tester is used with the engine idling and your problem is occurring at higher speeds.

You came this far without finding out why your engine misfires, so you might as well take a shot. Replace the coil.

Remember, checking for engine misfire can be a frustrating and tedious job. To save yourself trouble, check all possibilities starting with the simplest and working to the difficult. Persistence pays off. ★ ★ ★



Clean carburetor using a product that's commercially available.

If carburetor is too dirty, disassembly and complete cleaning will be necessary. (See text for additional checks.)

place PCV valve and recheck system.

9. If your car was built in 1973 or thereafter (1972 in California), it probably has an exhaust-gas recirculation (EGR) system. A vacuum leak in this system can cause engine misfire at idle and slow speed.

Essentially, the EGR system has an EGR valve and hoses. Inspect hoses leading from the valve for cracks and loose connections.

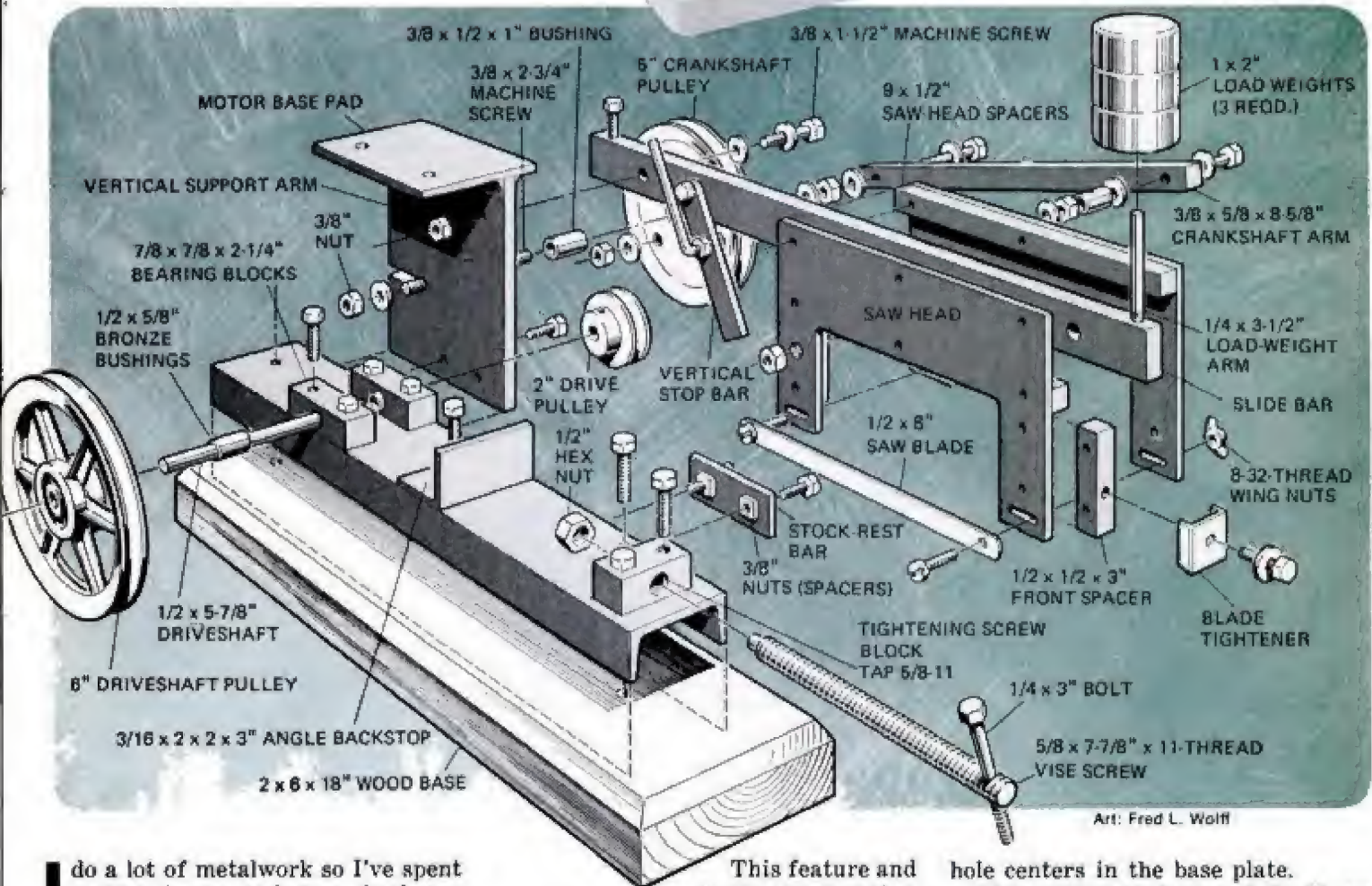
Warm up engine and pull off the hose attached to valve's stem. With the engine idling, pinch the hose closed gently with pliers. If missing



Low-cost cutoff saw you can make

Build this power tool and make hacksawing a lot easier and more accurate.

by W. P. Daniels



Art: Fred L. Wolff

I do a lot of metalwork so I've spent many hours using a hacksaw. While it's a valuable hand tool, it just doesn't have the stability for precise work where great accuracy is demanded. This started me thinking about a power hacksaw that would cut channels, angles and rounds with ease and precision even up to the 3-in. size.

The design I came up with can make cuts to a tolerance of a few thousandths of an inch, eliminating the tedious job of grinding and hand filing always necessary after hand sawing. Although it can produce work of machine-shop quality, it's not too huge or heavy to be portable.

This feature and simple construction make it an ideal workshop project.

All steel parts required to build this unit are considered stock items. You can buy them from a local iron-work shop, and even from some salvage yards—although it might take a while to find what you want there. For instance, the bronze bearings (also called bushings) can be bought from most iron or electrical shops, and the pulleys are the standard V-grooved type stocked by most hardware stores. The power source can be any 1/4-hp electric motor (or larger) with a No. 48 frame. If a different frame is used, just drill new

hole centers in the base plate.

This unit was designed to fit an 8-in. saw blade, but you might consider buying bandsaw-blade stock by the foot; it's much more economical. For general use, you'll get the most mileage out of an 18-tooth blade; for nonferrous metals, like aluminum or brass, an 11 or 14-tooth blade is best.

Few tools are necessary to build this saw so you should concentrate on the most critical part of the job—measuring hole centers and sizes. The design has some built-in tolerances if you follow the specifications for proper drill size, but the best policy is to aim for perfection, so

(Please turn to page 168)

An expert's



You can bore a hole from one side of a board and wind up with a splintered mess, or you can bore from both sides and have a hole as clean as a whistle. This is just one of the little tricks that is the mark of a good craftsman, and comes as naturally to the expert woodworker as blowing sawdust off the line.

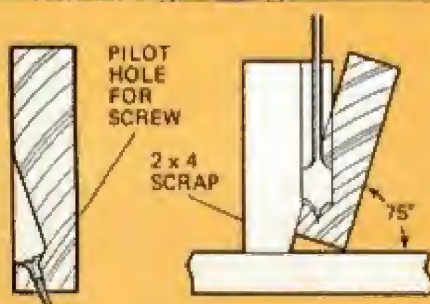
by Wayne C. Leckey
HOME AND SHOP EDITOR

Photos: Rosário Capotosto
Illustration: Adolph Brotman
Art: Peter Trojan

best woodworking tips

Angle in on screw pockets

Screw pockets for fastening tabletops are neatly formed in the table's aprons with a beveled 2x4 block clamped to the drill-press table. With the depth gauge set for the right depth, the work is clamped against the face of the slanting block. By cutting tangent to the surface, the bit forms a neat shouldered pocket for the screw. Using a much smaller drill, another hole is made in the bottom of the pocket for the screw.



Rabbet wood discs on table saw

Rabbeting a disc is normally a job for a shaper, but when you don't own one, you can do it with a semicircular jig attached to the rip fence of your table saw. To start, gently lower the disc into the spinning blade, then rotate it slowly with your right hand while pressing inward with the left.

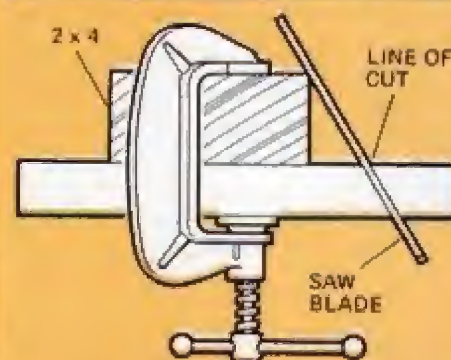


Prevent creeping with sandpaper

Workpiece creeping is difficult to prevent when you make angle cuts greater than 45°. The expert will cement a sandpaper strip to the face of his miter gauge to add a nonslip surface.

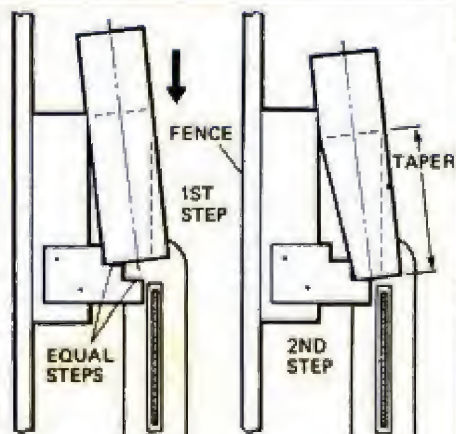
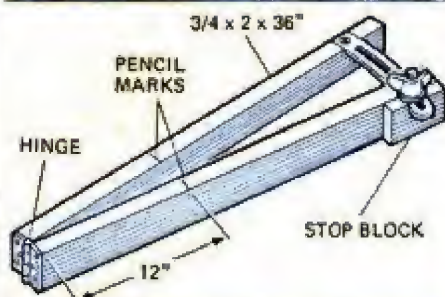
Guide your saw for a bevel

It takes a steady hand and a good eye to saw a uniform bevel the length of a board with a handsaw. However, there's nothing to it if you clamp a 2x4 scrap to the top of the work against which the saw blade can bear at an angle as you guide it along the pencil line. The 2x4 must be positioned to suit the angle that you are cutting; the greater the angle the farther the 2x4 must be from the line.



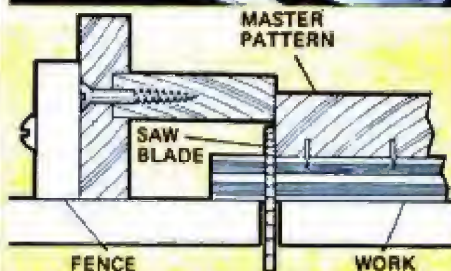
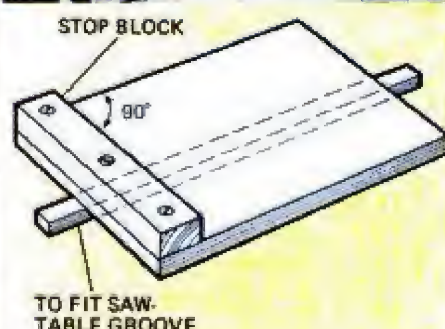
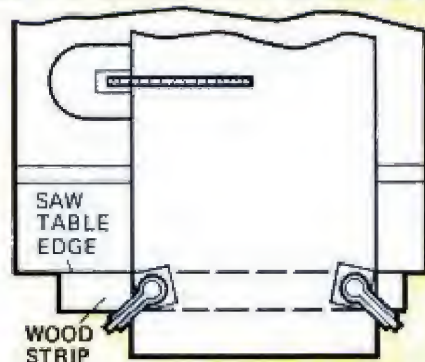
Two ways to rip tapers

Taper ripping requires a jig to hold the work at the required angle as it goes through the saw. Details below show two jigs; one a two-leg hinged affair, the other a stepped block. The hinged jig is set by measuring across the legs at a point 12 in. from the end. By opening the legs 1 in., you set the angle for a 1-in.-per-ft. taper. The non-adjustable stepped jig is good for work tapered on four sides, such as table legs. The work rests in the first notch for the first pass, then in the second notch.



Board for squaring odd pieces

A squaring board comes in handy for cutting a straight edge along irregularly shaped plywood leftovers from your jigsaw and bandsaw. It's nothing more than a sliding platform fitted with a runner that rides in the table groove. The squaring board is used to support and guide the work as it passes through the blade. The rip fence should never be used to make such cuts. A squaring board is especially good for small pieces. When you want to square-up the edge of a large piece, a strip is clamped to the underside and then it is guided along the edge of the saw table itself. Placement of the strip is dictated by the size of your saw table, plus what is required to true up the ragged edge. If your saw is small in size it may be difficult to guide the work along the table edge without a helper.



Mass-produce identical work

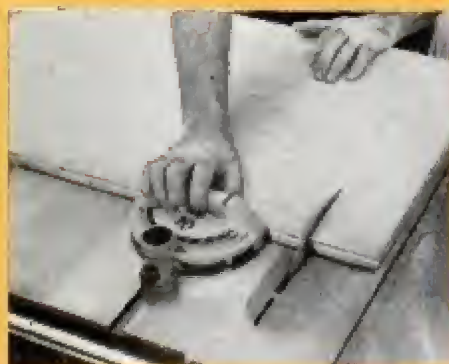
Pattern sawing is a fast way of duplicating straight-sided work in quantity on your table saw. The setup requires an overhanging wood fence which is clamped or screwed to the saw's fence, and a master pattern of the part to be duplicated. The points of two brads in the master pattern embed in the wood to anchor the work. As the detail shows, the wood fence is aligned flush with the outer face of the blade and the blade is raised just high enough to handle the thickness of the work. Clearance under the overhanging fence must suit the thickness of the work, and the pattern must be thick enough to ride the edge of the fence. The work, of course, must be cut up beforehand to the approximate (and slightly larger) size and shape of the master pattern.



Miter molding faster with a jig

A miter jig is faster and more accurate than your saw's miter gauge for cutting right and left-hand miters. Runners are added to the underside of a plywood platform and the saw is used to make its own kerf. A plywood fence is positioned and screwed to the platform so it forms a perfect 90° angle at an exact 45° angle to the kerf. A strip of sandpaper glued to the face of each fence of the jig will help keep molding from shifting as it's being cut.

An expert's 23 best woodworking tips



Crosscut wide boards

Place the miter gauge backwards in the table groove when crosscutting a wide board on a small saw. This utilizes all of the table in front of the blade and provides maximum support to the work. After you are halfway through turn off the saw and reverse the gauge in the groove to complete the cut.



Cut duplicates safely with block

Never use the fence itself as a stop when crosscutting duplicate pieces. The work will wedge between the fence and the blade and be thrown with force. Always butt the work against a stop block clamped to the table. This way there is no chance of the pieces getting caught and thrown by the saw.

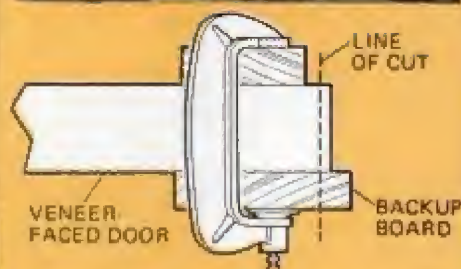
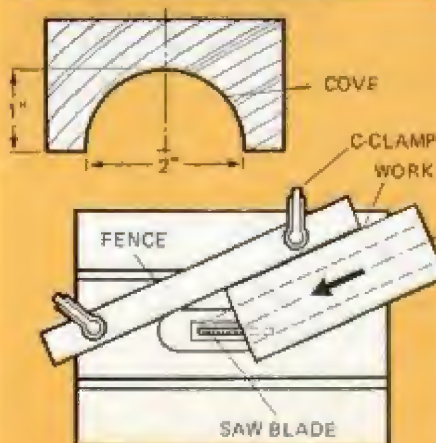
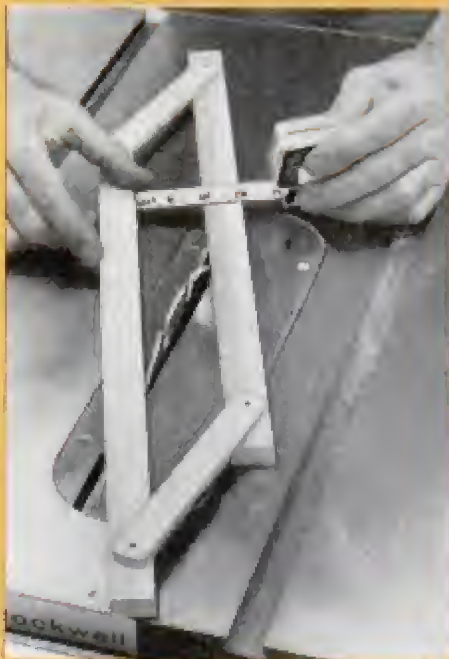


Duplicate identical dados

Extra-wide dados in duplicate work come out exactly the same length each time if you clamp a stepped block to the left corner of the saw table. Precut to suit the width of the dado blade and the length of the dado, the block determines each successive pass by resting work in the steps. The last step automatically sets the width. You can't miss since the block does the measuring.

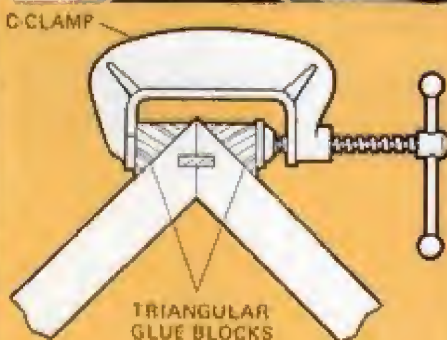
Forming cove molding

Making cove molding on your saw is possible by passing the workpiece repeatedly across the blade at an angle. The auxiliary fence is positioned to form the cove down the middle of the work, then clamped to the saw table. Stock is cut away by successive passes over the blade, cutting no more than 1/16 in. each pass. A combination blade works best and produces a smooth cut. Width of the cove establishes fence angle and is found with an adjustable parallel gauge as shown in the lower photo. Work is finally ripped down the center to produce two strips of cove molding.



Trim bottom of door with backup

Sawing off a narrow strip from the bottom of a door with a handsaw presents two problems; guiding the saw so it won't run off and keeping it from splintering the opposite side. Both problems are solved by clamping a scrap board to the underside. With the board backing the cut, the saw can't chip or scar the veneer.



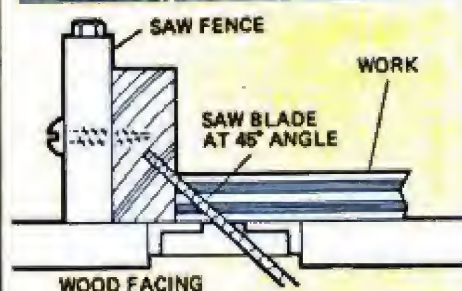
Clamp mitered joints

While there are special "clothespin"-type clamps with swivel barbed jaws for holding mitered joints when gluing, you can make your regular C-clamps do by gluing several triangular clamping ears to each side of the joint. The ears are later chiseled off flush and the surface sanded.



Avoid cupping by alternating

When tabletops and other wide panels are built up of random-width boards, the heart grain of the boards should change direction from board to board and the bar clamps should be placed on alternate sides of the work.



Miter wide boards

How do you rig your bench saw to cut a perfect miter along the edge of a wide board or plywood panel? First you add a wood facing to the rip fence, then with the blade tilted 45° and raised 3/4 in., you ease the fence into the rotating blade enough to just bury the tip of the blade in the wood facing. Fence will support miter.

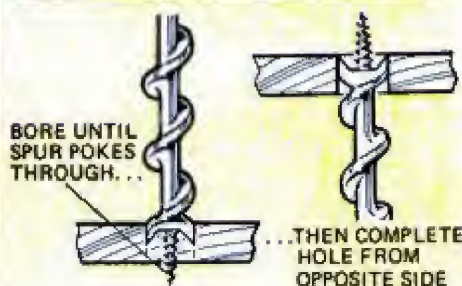


Contour legs with a sanding drum

For a perfect fit when doweling legs to a central turning such as the post of a lamp table, use a sanding drum. It works best when both the diameter of the drum and turning are equal. Notch a board to fit around the drum as shown and support it horizontally so its surface is at the very axis of the drum.

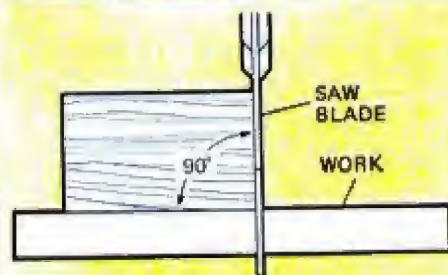
Bore clean-cut holes

Boring a hole from both sides is not always possible but when it is, remember this stunt for producing a clean-cut hole. Start boring from one side until the bit's spur pokes through the other side. Then back out, turn the work around and finish the hole by boring to meet the first. You'll have a clean hole and no splinters.



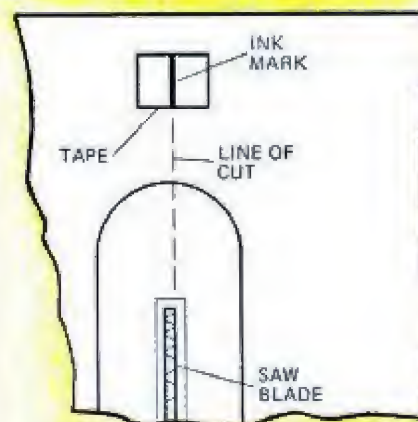
Two ways to drill a disc

A V-notched board clamped to your drill-press table will uniformly space holes around the circumference of a disc. To bore them in the face, the table is kept horizontal. To bore them in the edge, the table is tilted 90°. The board must be positioned so the V-notch is in line with the bit and at a point to suit the distance you want the holes from the edge.



Block keeps handsaw vertical

With practice and a sharp handsaw it's no great feat to follow a line when sawing a wide board. The trick is holding the saw vertically the full length of the cut. When it's important that the cut be 90°, simply hold a square-cut scrap of 2x4 against the saw blade as you continue to saw.



Saw precisely to line

Lining up the mark on the work with the saw blade is easy if you stick a piece of white tape to the saw table and make an ink mark on it directly in line with the inner face of the blade. You'll be right on target when you push the work across the table and into the blade.

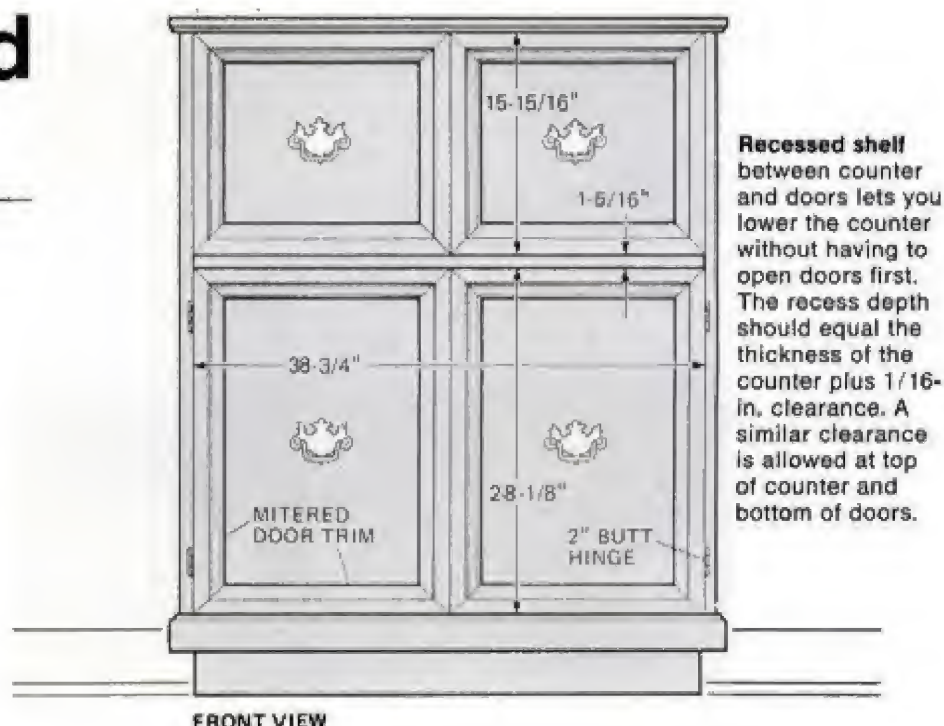
Build this one-of-a-kind home bar

by Wayne C. Leckey
HOME AND SHOP EDITOR

Open or closed it's a beauty. It's a bar your guests will admire every time the drinks are on the house.

True, you'll have to be able to tie the sink into a drain pipe and connect it to hot and cold-water lines, but you'll have the ultimate in a home bar. It offers a roomy storage compartment for beverages, a handy drawer for napkins, stirrers, jiggers, a colorful bar-type sink and a built-in mini-size refrigerator.

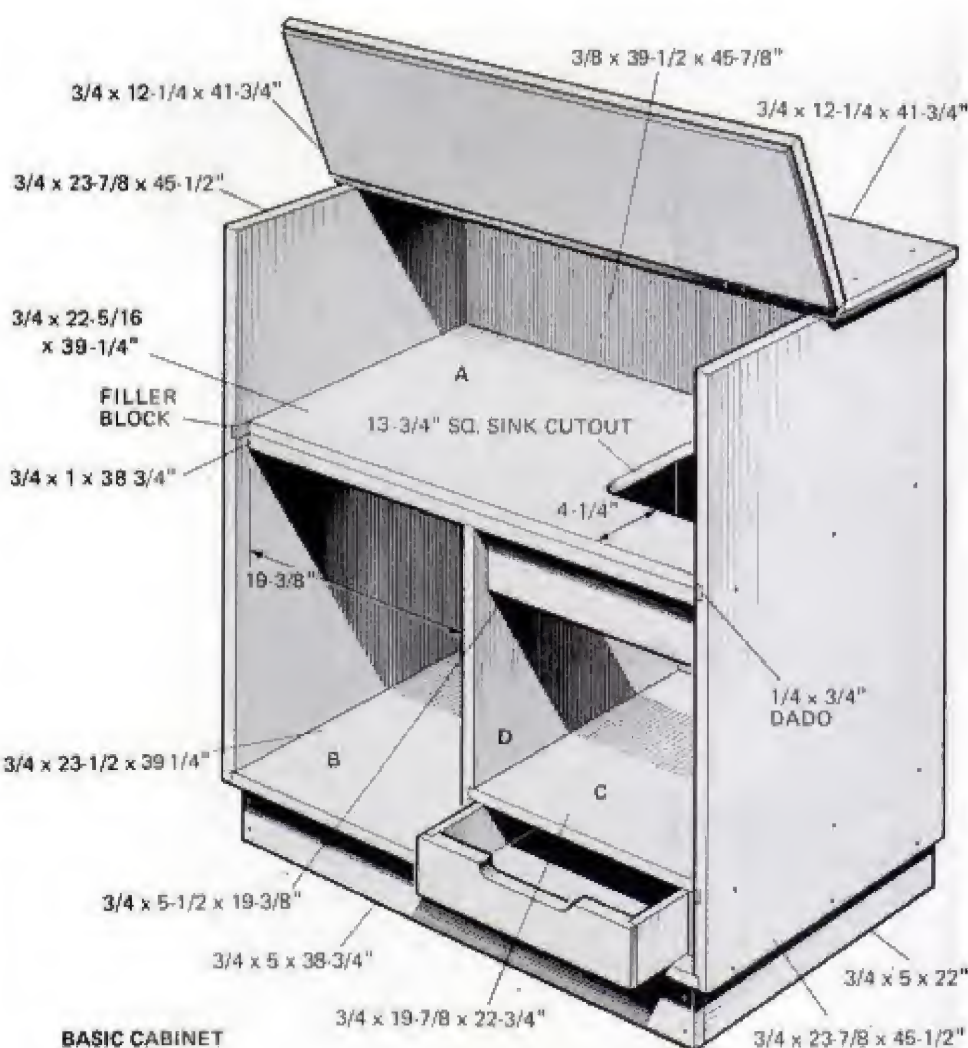
Its cost depends on materials used. We built ours from lumbercore plywood, better plywood than common



Bar's refrigerator compartment is dimensioned to accept this Norcold RV unit. The refrigerator has walnut-finish door, runs on battery or 110-v. current and is available from Sears for \$239.95.



Acrylic bar sink called Gimlet comes in red, black and sunflower colors with gold or chrome faucets, measures 15 x 15 in., is self-rimming for easy installation. From Kohler Co., Kohler, Wis.



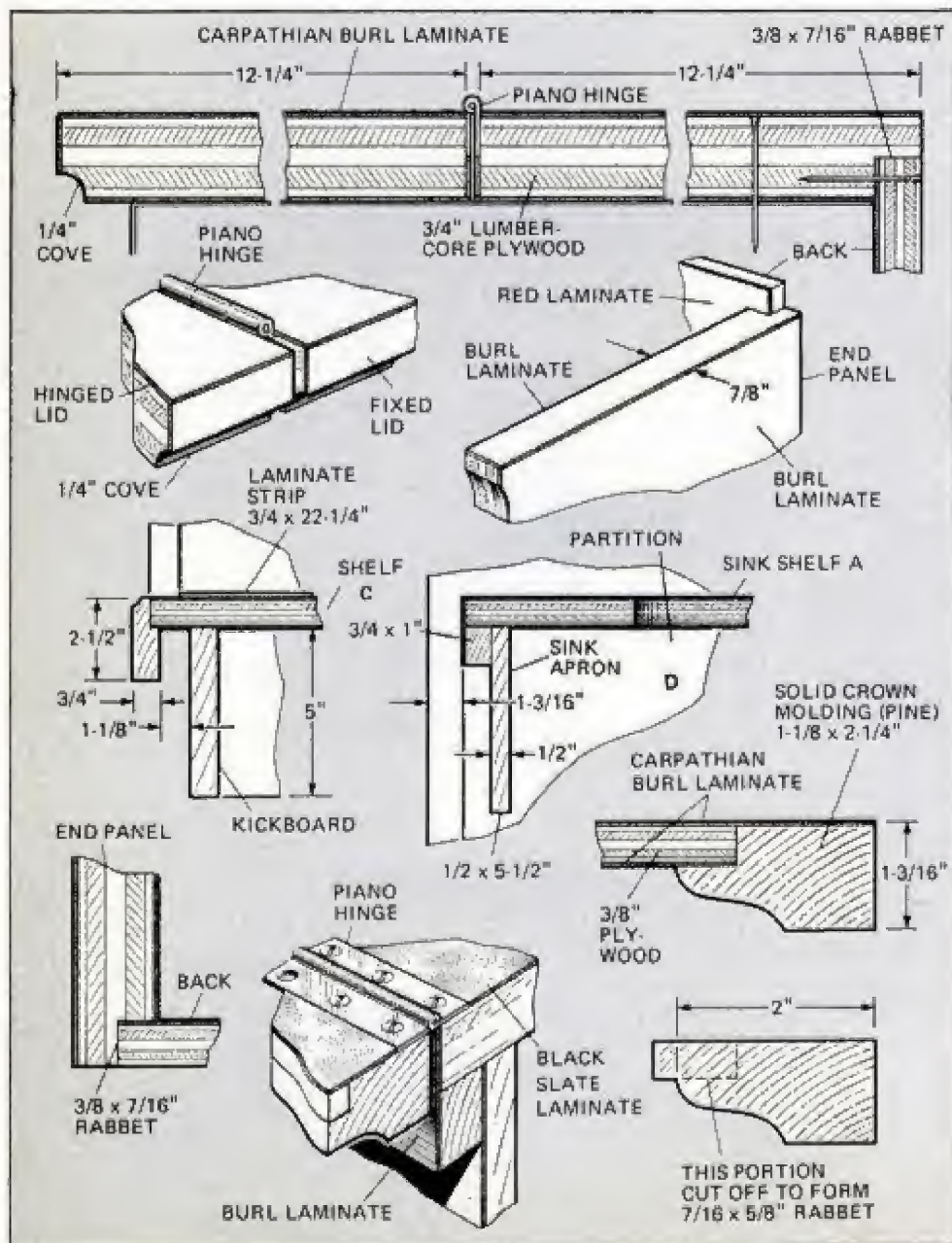
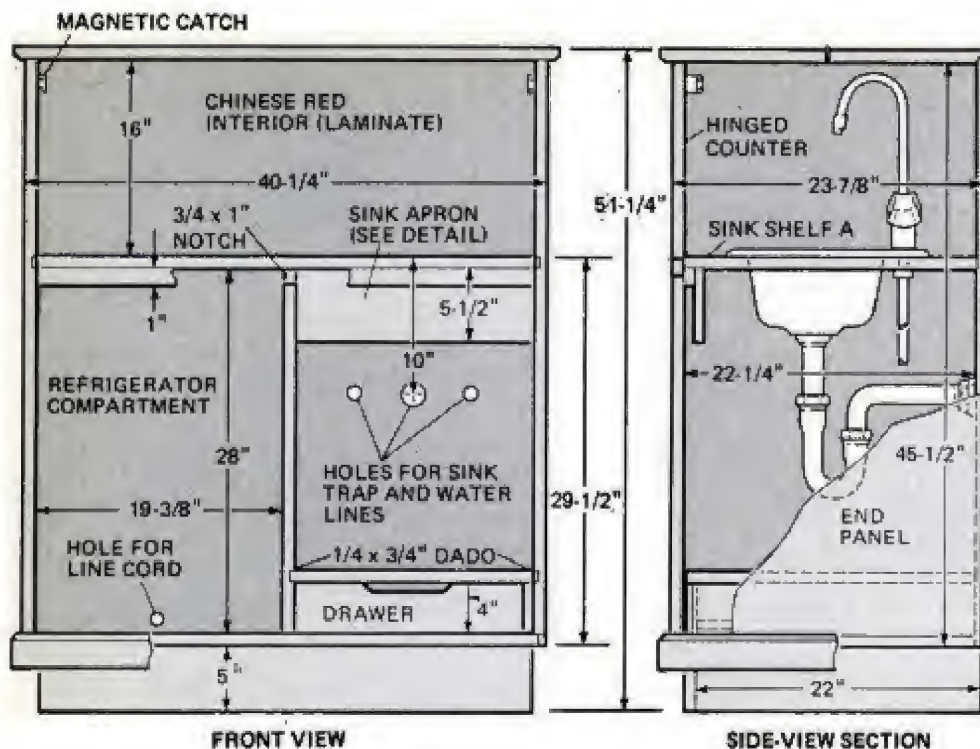
Photos: George Ratkal
Art: Fred L. Wolff
Cabinetry: Everett Johnson
Design: Tom Fung



Don't throw just another party. Instead, make a memorable impression with PM's one-of-a-kind bar that has everything—sink, refrigerator and storage—all in one neat and handsome cabinet. It's elegant for any room in the house, and you can build it yourself.

When it's closed, no one would guess this handsome cabinet is a home bar in disguise. You'd be more apt to think it a stereo console with speakers behind the doors. When open, it's a party center with all you need to add cheers to entertaining fun.





fir but it costs more. We covered the plywood with plastic laminate to add a handsome, durable finish. It, too, added to cost. We used piano-type hinges for the drop-down counter and the flip-back top. Again plain butts would cost less.

If you skip the laminate and finish your cabinet with stain and varnish, you can't get by with less than cabinet-grade, veneer-face plywood for it to have a furniture-store finish. However, if a simulated wood-grain finish will do, you can build your bar from less expensive fir plywood.

Building the cabinet

The basic cabinet is a simple structure. A 3/8-in. plywood back sits in a rabbet; shelves A, B and C, plus partition D, rest in rabbets and dados. Note that the 1/4 x 3/4-in. blind dados for shelf A and partition D are cut to full panel width and later filled at the front with filler blocks. A 13 3/4-in.-sq. cutout is made for the sink with a sabre saw before shelf A is installed.

If you cover the plywood with laminate, it's best, and easiest, to apply it to the interior surfaces before the parts are glued and nailed. We used a decorative laminate called Nevamar, made by Exxon Chemical Corp., Odenton, Md. 21113. We lined the three sink-compartment walls with Chinese red and faced the counter with black slate. If you have not applied laminate before, see *How to work With Plastic Laminate*, page 100, Feb. '75.

To assemble your cabinet, first glue shelf C to partition D, then the partition to shelf B. Add shelf A, then the ends and the back last. Add the back temporarily for now to help brace and square-up the assembly.

Build kickboard separately

The three-piece, butt-joined kickboard is assembled separately, covered with laminate, glued to the bottom of shelf B and nailed from the top. We picked carpathian burl laminate and used it for a rich look on kickboard, ends, doors and top.

Rip the 2 1/2-in.-wide skirt from 3/4-in. hardwood, rabbet the back and run a cove along the top edge. Miter the front corners and glue it in place. The skirt is later antiqued and varnished, as is door molding.

Add laminate before hinges

To laminate exterior surfaces: First, edge-band top and front edges of end panels before the two-piece hinged top is in place. Then face the ends. As when edge-banding, cut the laminate 1/4 in. oversize and later trim it flush with your router and a

(Please turn to page 142)

Two for your shop

• Deluxe bench hook • Lathe dividing attachment



When sawed through gap in a cleat, both parts of workpiece are firmly supported.

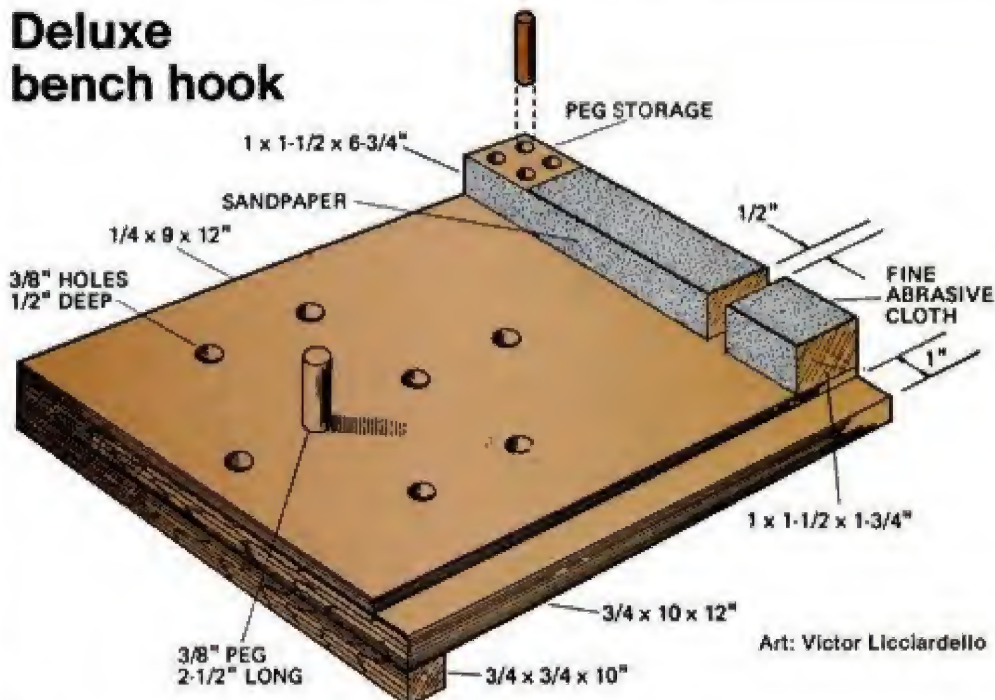


Removable wood pegs hold irregular-shape work securely for filing or carving.



Sandpaper surface is handy for chamfering the ends of dowel pins when gluing.

Deluxe bench hook



Art: Victor Licciardello

The common bench hook, basically a board with a cleat at each end and designed to hook over a table edge, has always been a handy fixture for benchwork. With the added innovations you see here it becomes twice as useful. For example, when a step-down surface is added, you can cut dowels, molding and other work without sawing into the surface. When the top stop cleat has a gap in it, the work is supported better for sawing or filing a notch in it.

When the cleat is covered with sandpaper, the work not only is less apt to move, but the abrasive provides a handy surface for chamfering the ends of dowel pins to be used for gluing. Finally, a series of $\frac{3}{8}$ -in. holes randomly spaced and bored in the surface of the hook for dowel pins will help steady the workpiece for filing. Holes at the far end of the cleat provide a place to park the pegs and keep them handy.—Walter E. Burton

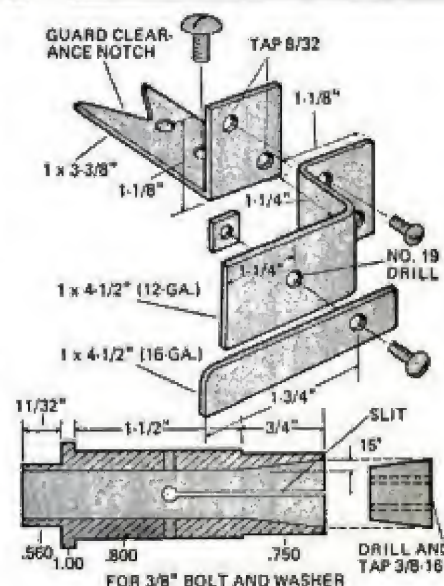
Lathe dividing attachment



Gear rides end of holder; hex-head bolt locks holder in spindle when tightened.

I made this simple headstock dividing attachment for my 9-in. South Bend lathe, but it can easily be made to suit other makes. You use the standard change gears to provide the divisions generally used. The 60-tooth gear, for example, will make divisions 1, 2, 3, 4, 5, 6, 10 and 12. The 56-tooth gear will serve for 7 and 8.

The 54-tooth gear is suitable for 9 and the 44 tooth for 11. I turned the gear holder from cold-rolled steel and used drill rod for the expander to provide a hard-wearing surface. When not needed, the pivoting indicator finger of the attachment can be removed and the rest left in place.—Carl A. Traub





Parquet floors: Careful preparation is the key to a good- looking job



BASKET WEAVE PARALLEL



FOUR SQUARE FINGER



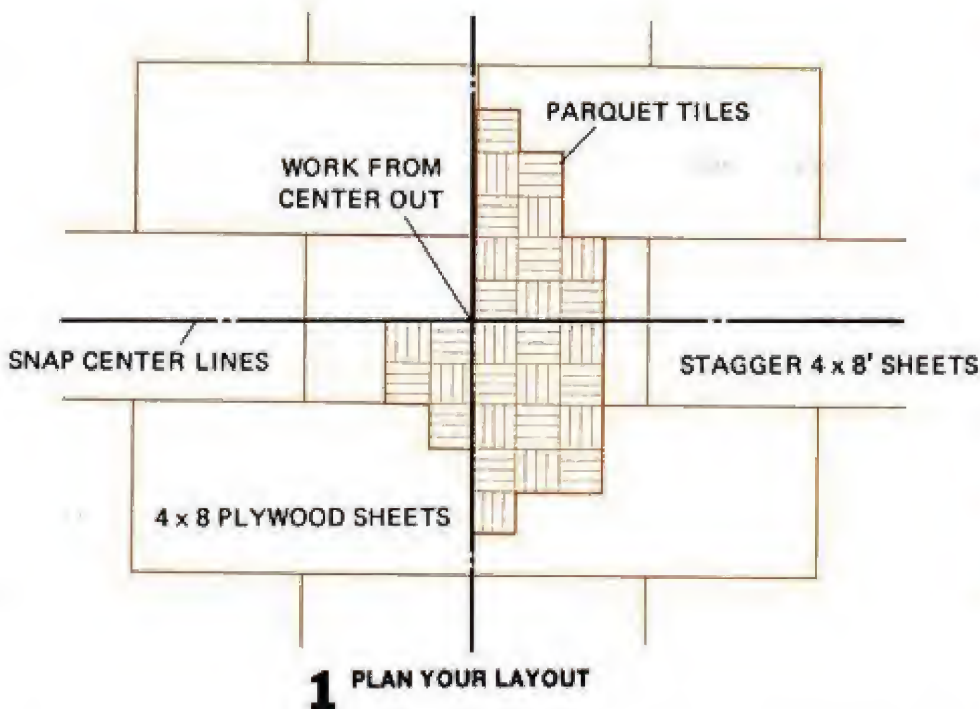
FOUR SQUARE DIAGONAL



DOUBLE HERRINGBONE

Laying a parquet floor used to be a job for a master craftsman—but not any more. With industry innovations like pre-finished surfaces and self-adhering backs, this job can now be tackled by homeowners. There is a wide variety of woods and patterns and a range in cost from raw wood, which must be set in paste, up to self-sticking tiles with stained, sealed and polished surfaces.

If you think it sounds too easy—you're right—there is a catch. You must start with a strong, clean, level surface. Putting your floor in shape might take only a layer of 1/4-in. hardboard across old floorboards. We've outlined the most complete job you might have to do. Here's how.



1. Prepare the surface

Whatever room and tile design you're working with, you must provide a smooth, strong and level surface to lay the tile on. It's also important to stagger the plywood end joints in order to distribute the load evenly across the floor. Any material, ranging from hardboard to 1x6 tongue-and-groove subflooring, should lap the end joints from one support to another.

In general, you should follow the same layout rules for tile floors as for tile ceilings: Snap center lines and work with the edges of the tiles along the lines, filling in from the middle of the room toward the walls. This way, if your room is not square, you stand a chance to make up the discrepancy behind furniture or under the baseboard where it won't be noticed.

2. Most durable installation

Laying a new subfloor is the way to get the most complete and durable installation. It gives you a chance to level up bad spots, to provide a new, strong surface and to allow for a ventilated air space in between the 2x4s that will keep the tiles warm and dry.

This will also make the floor more comfortable to walk on because a wood subfloor is more resilient than concrete.

3. Bridge the low spots

The best way to handle low spots is to bridge them with 2x4 sleepers and then support the bridge with shingle points. You can drive one in from each side and let them overlap

as much as needed to make the 2x4 level. You should check for level along the length of the board and across from one to another. Note that adhesive is used along with screws and anchors to make sure this floor won't shift or squeak or start popping the tiles loose after it's in use.

4. Combine nails and glue

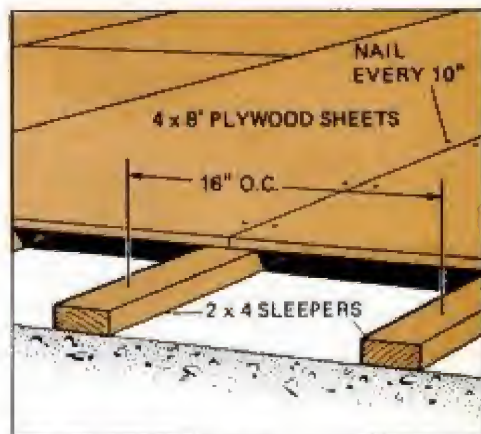
A thin bead of construction adhesive between the sleepers and the concrete will give you the permanent and professional results you're looking for. Nails, on their own, may work loose and the joints may separate, but if you combine the force of the nails with that of the adhesive bond you will make this job true and tight.

5. Check for flush surface

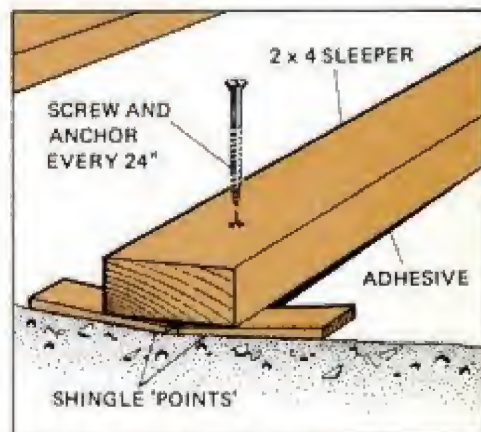
You're almost ready to lay the tiles—but give your floor one last check. Make sure the nailheads are driven down flush to the plywood. You don't want to discover protruding nails as you're spreading paste or laying tiles. If some of the plywood seams are uneven, now is the time to plane or sand them down and fill in any voids in the surface skin with water putty.

Any loose material on the plywood will prevent the tiles from adhering properly, so all good craftsmen will invest a little extra time in this last step to clean up the sawdust and double check their preparations.

Now you're ready for the easy part of the job—laying one tile next to another for a beautiful parquet floor. —Mike McClintock, Associate Home and Shop Editor



2 LAY 2x4 SLEEPERS



3 LEVEL UP WITH SHIMS



4 GLUE AND NAIL PLYWOOD



5 PLANE DOWN UNEVEN SEAMS

Color photos: Bangkok Industries



3 ways to use a one-car garage and still get the car in

by Ray Gill

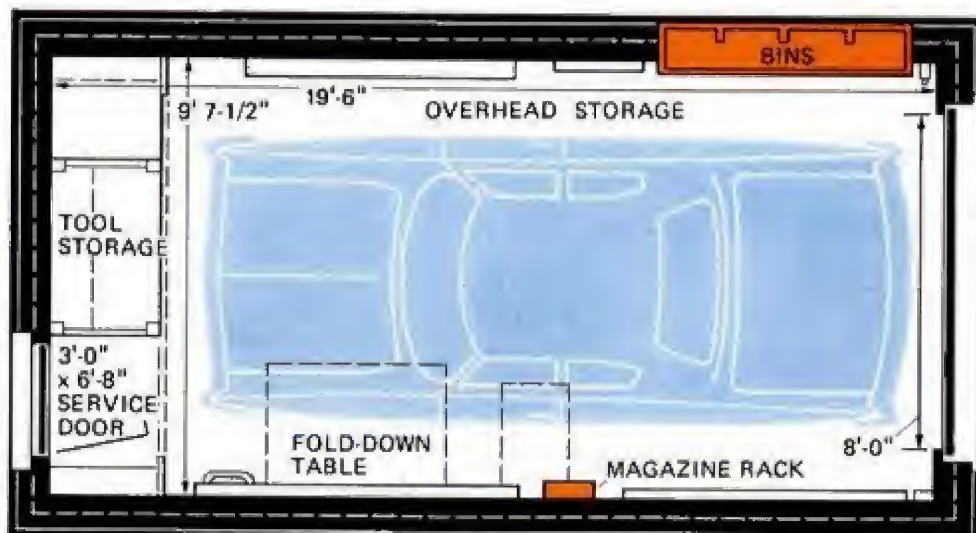
Even the smallest one-car garage can add an unbelievable amount of living and working space to your home. This can be done on a surprisingly low budget without moving walls or building extensions. The trick is to build in well-organized and flexible units that can be of service when you need them, and be out of the way when you don't. The garage I worked with is attached, with a utility room, to a small Cape Cod-style house and has inside measurements of 9 ft. 7½ in. x 19½ ft. I developed this area into:

- a versatile shop,
- a gardening center and
- a flexible storage facility.

As you can see in the picture, I am still able to get the car in.

Since no neglected garage is ever in very good shape, I started by repairing the Sheetrock ceilings and walls. This called for a thorough spackling job (filling holes and sanding down bumps) and a new coat of textured wall paint.

The floor needed work too. So after a good cleaning I flash-patched the bad spots and then laid down a liquid vinyl floor. To do this I spread a thick water-based epoxy, sprinkled on multi-colored vinyl chips and finished with three coats of clear sealer. This turned out to be the best solution to the problem because of three advan-



PLAN VIEW

Built-in versatility

The Homosote panel can be hung with eye hooks on the side wall (above) or over the storage area (right). With the bull's-eye showing it's decorative and functional as a target for darts. The reverse side doubles as a screen for slides and movies. With foldaway shop benches, the garage can be set up for many uses.





Gardening center

The trestle table is totally demountable. The 4x8 plywood top is stored in normally "dead" space above the garage door tracks and sawhorse brackets are removable. Space-saving shelves were cut into the stud wall where plastic containers and ConTact-covered coffee cans provide storage for cuttings and small tools. Bins underneath will hold large bags of fertilizer and grass seed. A section of the rear wall has dowel pegs to hold tools and the grass bag, and a wide shelf notched for a rake.

Storage area

Main storage units are 25 in. deep, a dimension I got by pulling the car into the garage and measuring exactly the room I needed for passage. This wall holds large gardening equipment, a radial-arm saw (on casters), large power tools, and every kind of leftover from closets in the house. Good planning is the key here; careful measurement for the lawnmower and saw, and a same-size system of storage containers.



Workshop wall

Activity here is centered around two worktables and a 4x8 pegboard sheet for tool storage. We mounted the ¼-in. board on heavy-duty spacers with holding screws into each stud (16 in. on center). The main workbench is secured with four 3½-in. butt hinges to a 2x4 ledger lagscrewed to the wall. The legs are also on hinges so the unit can fold out of the way. A smaller surface to the left is built for heavy-duty use with a 2x6 ledger and 4x6-in. T-hinges instead of butts.



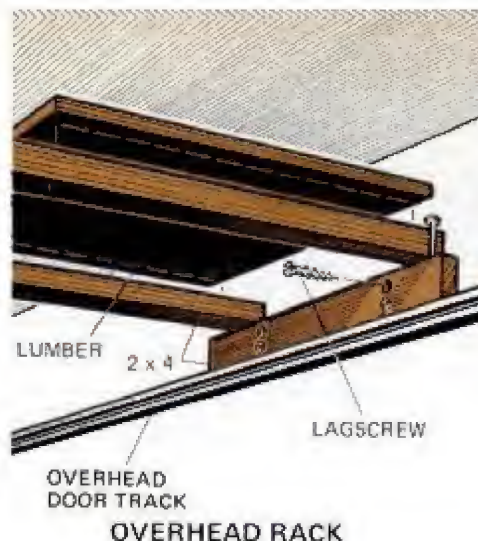
tages: easy installation, low maintenance and durability.

After refinishing all interior surfaces, I started "building in" the variety of uses wanted. First I built the rack above the garage-door tracks. A 2x4 lagscrewed to the wall on each side, with two 2x4s on edge bridging the span, can support plywood tabletops, sawhorse legs, heavy metal pipe clamps, loose lumber and moldings. Almost every room has some "dead" space, but with a little ingenuity you can design a simple structure like this to take advantage of all available space.

More storage

As mentioned earlier, the main storage unit (for outsized items) is on the back wall. But I wanted to avoid as much clutter as possible. A room like this, that can be used in so many ways, is bound to collect the remnants of all kinds of projects. So I needed another storage area that could hold odds and ends like art supplies, ball and bat and paint cans.

Art: Peter Trojan



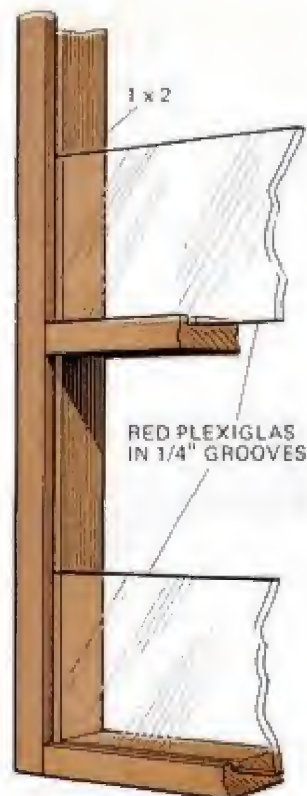
A simple rack placed over the garage door uses "dead" space effectively.

Following the same idea of reclaiming unused space, I literally built in a storage unit by recessing the shelves into the wall. After removing the Sheetrock, I framed the opening with 1x10s. By cutting 1x8 boards to fit around the studs, I was able to gain 4½ in. of shelf space. Use of colorful plastic containers to organize the shelves gave a uniform and attractive appearance. Labeling each bin made it easy to identify stored items.

Useful and colorful

As functional as this room is, remember that it should be attractive and pleasant. One of the simplest built-in units was the magazine rack. The 1x2 frame was routed to accept the edges of the red Plexiglas sheets, then toenailed to the studs and painted to match the wall. It didn't get in the way like a bookshelf and was very useful in storing instruction books and repair manuals.

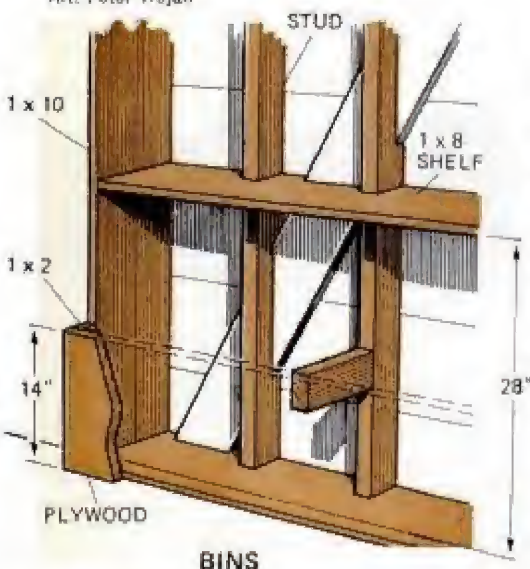
Once you start a project like this you'll come up with space-saving ideas that suit your needs best. Hopefully, my project will get you thinking about reclaiming some garage space. You might find you'll be adding a versatile and useful room to your house. ★ ★ ★



MAGAZINE RACK



A magazine rack is handy for reference and adds a touch of color. Shallow, it takes but little space.



Shelves are recessed into the wall studs for neat and efficient storage.

Your wife will love its cozy, textured look.

The Armstrong Integrid® System. As easy as

3-2-1

3 steps. 2 days. 1 man.

If you've put up a tile ceiling, you know what a hassle it can be. Nailing up all those furring strips—two nails every 16 inches. Stapling up every tile—four staples each tile. A long, hard job. But no more. Not with the Armstrong Integrid Installation System. It's a lightweight interlocking metal system that goes up quickly and easily with a minimum of nailing and no stapling. Best of all, the metal never shows!

You can buy Integrid in convenient premeasured packages. They include everything but the nails. There's practically no waste, and no special tools are required.



Here's how the Integrid Installation System works.

Step 1.

Install the metal furring channels directly to your old ceiling. (Or you can suspend Integrid on hanger wires to lower the ceiling.) The metal won't warp and rack like wood furring strips, so you won't have to worry about joints pulling apart. Only 12 nails for a 12' x 12' room, not 260.



Step 2.

Slide the tiles into place. Choose from a wide assortment of designs, from formal Victorian to casual rough-plaster effects, including the Early American sampler design shown above. With this system, each tile interlocks with the others for a tight fit that minimizes joints. The old beveled edges and block look are gone. Now the design flows uninterrupted wall to wall.



Step 3.

Snap each metal cross tee onto the metal channel, and slide it into the groove on the side of each tile. Each tee supports four 12" x 12" tiles, and the metal "disappears." The interlocking ends of each tee are slotted to help compensate for common installation errors, like leveling. Integrid—fast, reliable, and as easy as 3-2-1!



For more information, see your Armstrong retailer—listed under "Ceilings" in the Yellow Pages—or mail in this coupon.



I did it
myself!

Armstrong

Please send me color brochures on the Integrid Installation System and the names of my nearest Armstrong Ceiling Center® retailers.

Armstrong, 7602 Watch Avenue, Lancaster, PA 17604

Name _____

Street _____

City _____

State _____ Zip _____

Two more ways to be a hero in your own home!



Dress up a bathroom

It's easy with DAP Kwik-Seal® Tub & Tile Caulk. Makes a neat, white, watertight seal around tile, tubs, sinks, showers. Grouts tile. Caulks window and door frames. Stays flexible. Takes paint.



Keep your house snug

Seal-up cracks and joints inside and outside your home with DAP Latex Caulk. Keeps heat in—cold out. Guns easily, sets fast for painting in 2 hours. Won't stain, bleed or show through latex or any other paint.



The name people know best in home fix-up

DAP Inc., General Offices: Dayton, Ohio 45401
Subsidiary of Plough, Inc.

THE ACCIDENT YOU'D NEVER FORGET (Continued from page 70)

execute this avoidance maneuver without error—and all other maneuvers required by the course—two expert drivers from General Motors Proving Ground and one from Calspan drove the course several times at close to the limit of the cars' capabilities. It was soon evident (instrument tapes proved it) that when drivers failed to execute a maneuver successfully it was because they were squeamish about using the full cornering ability of their car, even at 30 to 40 mph. When cornering, drivers were willing to take only .35 Gs—about half of the car's capability. At one G, a driver feels a side pull equal to his own weight.

Wet-surface handling

Barreling down the straightaway again, drivers came to a stretch of blacktop under an inch of water. The lane veered to the right at a 45° angle, then back 45°, then straight ahead. Intent on making up time on this stretch, drivers went into it at nearly 50, saw the lane angle and hit their brakes. If they stayed on them, they went into spectacular skids.

Those who didn't brake did better but found their steering had to be carefully timed. Even some professionals "lost it" here. Those who did get through the wet stretches without skidding didn't simply "sling-shot" through with luck. They did it by driving with a precise, delicate touch. Still, 47 percent had at least one failure in this part of the course and Richard Rasmussen, GM Proving Grounds engineer concludes: "People do not readily adapt to changing road friction; they do not slow down enough for these conditions."

There were more failures by drivers in the wet—and elsewhere—on their fifth run than on their first. Researchers can only speculate why. Speeds went up on the later runs; was it because familiarity with the course was breeding contempt for "risk"? Or had earlier success at lower speeds made drivers overconfident? Under 30 mph, on the wet stretch, there were practically no failures. At 35 to 40 mph, about one-fourth of the runs met with failure. Over 40 there was almost twice as much failure as success. As speed went up, accuracy went down.

It's easy to recognize the real-life parallel of this situation. A driver returning home from work on a route he knows well—he drives it twice a day—is in a bit of a hurry; it's his bowling night. Like the drivers on the test-course straightaways, he guns it whenever he can. He'll be okay—if the unexpected doesn't hap-

pen. A little rain and a slick spot right where he has to avoid a truck and a concrete abutment; a driver who suddenly darts over to his lane to make a left turn and stops; a driver who forgot to turn on his headlights blundering out of a parking lot in front of him—he copes with things like this every day. But tonight he's pushing—and as speed goes up, accuracy goes down.

Most people overrate their ability as drivers. Of the 100 volunteers, only one considered his ability less than average; 74 percent rated themselves as above-average drivers. This overly optimistic opinion of their skill leads them to believe they're capable of driving aggressively when they're not. (Had they been, they would have pulled more Gs, used more of the car's capability. Yet 75 percent of the drivers said they had never driven a car harder at such speeds.) And an exaggerated estimation of their skill leads them to drive unfamiliar cars as aggressively as their own. Roy Rice was eager to learn what effect switching from the standard to the modified Chevelle had on the way test subjects drove. Drivers "pushed" the less familiar car harder. At many points on the course this caused them to make mistakes, particularly when they tried to maneuver on wet pavement and not spin out.

"Anyone driving a new car, or one who frequently drives rental cars, might well conclude from this that

(Please turn to page 126)

Using the brakes

One readily apparent finding of the GM study is that drivers need more training in the use of their brakes.

"They're not aware of 'squeeze' braking techniques that apply steadily increasing pressure without locking up their wheels," says Roy Rice. "However, our instruments showed people seemed to be aware when they locked up and when they released their brakes."

"Many drivers seemed to have a preferred pedal pressure, something that feels comfortable to them and they vary the slowing process more by how long they keep their foot on the brake than by how much pressure they use at any given time."

"Our longitudinal accelerometers showed some left-foot brakers had a foot on the brake and a foot on the throttle at the same time—probably because they had gotten into the bad habit of not getting off the brake. In stop-and-go traffic, left-foot braking is a great advantage—it reduces overall reaction time. But the driver who rides the pedal is certainly hard on brake linings."

"We saw all kinds of braking. One driver was so intent on stopping that she used both feet on the brake—one on top of the other."



If you ask your pickup to be more than a pickup, ask for a GMC.

The days of the good ol' hard-nosed no-nonsense pickup are numbered. Because today's pickups are being asked to do more than just an honest day's work.

They're being asked to do what the family car does.

They're also becoming involved in more and more purely recreational pursuits. And they're even becoming motorized works of art.

Well, if you're not already part of this trend, we suggest you drop by your GMC dealer. He's a truck expert. Which

means he can do a lot more than just sell you a pickup.

He can help you set up your GMC any way you want it.

He'll help you select the right engine, tires, axle ratio, and springs. He'll help you prepare your GMC for any special trailer-towing chores. Or to carry a camper.

But no matter how you equip your pickup, the important thing is that your GMC dealer is giving you such a solid truck to begin with. One with double-wall construction in the cab and pickup box.

Independent front suspension. High-Energy Ignition. And a roomy, comfortable cab, either 2- or 4-door, with lots of glass area and little niceties like padded armrests and visors and a continuous flow-through ventilation system.

Yes, a GMC is a fine pickup. It should be. Because it comes from people who've specialized in trucks for over 70 years. In other words, if you're itching to get in on America's growing love affair with the pickup, your GMC dealer is the logical place to go.

(The rather special pickup shown here includes some equipment not available from GMC.)

GMC. The Truck People from General Motors.



The Herman Uniform Shoe



If you're on your feet all day, you can't afford less than the best. That's just what you get in every pair of Hermans. The best fit. The best shoes for your work. The best boots for your sport. Herman Uniform Shoes come in 99 individual fittings: 6D through 6EEE to 14A through 14EEE. Plus 15 and 16C, D & E. Pictured are styles #5230 dress leather oxford and #7230 chukka boot featuring non-marking, oil resistant crepe soles; and, #5225 moccasin toe oxford featuring



non-marking, oil resistant Goodyear Chemi-gum® soles. Their perfect fit and fully cushioned insole guarantee great comfort. Top quality materials and workmanship guarantee great wear.

They're the best shoes we know how to make. And we've been making quality shoes and boots for almost a hundred years.

When you're looking for quality, hunt up a pair of Hermans.

J. M. HERMAN SHOE CO., INC., Dept. PM-US-6-2, Millis, Mass. 02054

FREE CATALOG

My feet deserve the best, send me your free catalog and the name of my nearest Herman dealer.



Name _____

Address _____

City _____ State _____ Zip _____

AAMCO® And You Can Make It!

The world's largest transmission chain is still growing strong after twelve years. Over 500 of our franchises located from coast to coast. New openings in some markets mean you too might qualify. For further information write:

AAMCO Transmissions, Dept. 230
408 E. Fourth St., Bridgeport, Pa. 19405



LEARN SMALL ENGINE REPAIR

at home in spare time-quickly!

Good Business-Great Hobby!
10¢ BRINGS BOOK, FULL FACTS
MODERN SCHOOLS

4225 N. BROWN AVE., DEPT. PM SCOTTSDALE, AZ 85231
EARN WHILE YOU LEARN



Can you spot the VW in this picture?

Hidden beneath the smooth, sleek lines of the Invader GT5 is a VW bug. This fun and easy to build sports car kit results in a low cost, exotic GT machine. Send \$2.00 for a 20 page, color catalog. Autokit, 2725 Magnolia St., Oakland, CA 94607. (415) 832-7737.

Name _____ Age _____

Address _____

City _____ St. _____

Zip _____ Phone _____ PM-2

ACCIDENT YOU'D NEVER FORGET

(Continued from page 124)

a little extra caution—not aggressiveness—is in order when they get behind the wheel of a strange car," says Rice. "There's a big difference between a safe driver and a skillful driver. Many skillful drivers got themselves into trouble on the course. The safe driver does a nice job of combining caution with skill."

Volunteer drivers were 60 percent male, 40 percent female. "The male drivers were clearly more aggressive than the females," says Rice. "They drove at higher speeds on both the straightaways and in the corners. And they made more errors."

"I'm not keen about having my wife see those results," Rasmussen adds, "but you can't deny that they made fewer errors in this test."

Does this confirm other studies indicating women are safer drivers?

Women allow margin for error

"I always have trouble with such comparisons as 'safer' and 'less safe,'" says Rice, "but our results would certainly suggest that women are involved in fewer single-vehicle accidents (not involving another car) because they are allowing themselves more margin for error."

Volunteers in the experiment were enthusiastic about what they claimed they had "learned" in their five runs over the course—although they were given no instruction. Many were interested in getting further training in handling emergency situations.

The Calspan research was, in fact, further work by General Motors aimed at improving just such a course in driver training. After researching and analyzing the principal causes of single-vehicle accidents, GM developed and introduced in 1969 an Advanced Driver Education program. The course consists of exercises that stress skid control, evasive maneuvers, off-road recovery and proper braking.

To expedite the spread of ADE, the company set up courses in many universities where high school driving instructors are trained. Over two dozen universities have built driving ranges and are teaching hundreds of high school instructors the emergency procedures. Meanwhile, service clubs and other groups seem to be the best hope of getting their communities to build the driving range needed and employ the qualified instructor. To help them, GM supplies specifications for the driving range (a minimum of 450 by 250 feet) and a 16-mm sound movie.

Did any of the drivers tested on

(Please turn to page 128)

BEFORE YOU ORDER A STERN DRIVE, TAKE A LOOK AT BOTH OF US!



This Outdrive Swings 60°. The greater the swing of your outdrive, the better you can maneuver your boat.

This Outdrive Tilts 60°. Tilting the outdrive is essential for launching, beaching and trailering.

The Trim* on this Stern Drive is Part of the Tilt System. It has hydraulic cylinders outside the boat.

The Steering System on this Stern Drive Uses a Tiller Arm. The wheel should be held firmly or it may spin to port or starboard during a trim angle change...especially in a hard turn.

This Outdrive is Bolted Directly to the Transom. Drive unit vibration and noise are transmitted to the transom and the hull.



This Outdrive Swings 90°. That's 50% more. You can literally turn your boat in *half* the distance required by any other stern drive.

This Outdrive Tilts 75°. OMC tilts so high you can change a prop without getting into the water, or hauling your boat out of the water.

The Trim System* on this Stern Drive is Separate from the Tilt System. By being separate, it is easier to "fine tune" your ride with independently controlled precision. And it is mounted inside the boat, away from corrosion.



The Standard Steering on this Stern Drive Uses a Worm and Sector Gear. This helps keep you on course in a turn, straight ahead, at trolling speed or at any speed. And, should you lose your grip on the wheel, it stays put until you turn it.

This Outdrive is Mounted Directly to the Engine. The OMC outdrive doesn't touch the transom, minimizing vibration and noise.

Ask your OMC Stern Drive Dealer for more information on OMC exclusive features such as 90° turning, 75° Hi-Tilt™, SelecTrim™, Tru-Course™ steering, Uni-Mount™ and Power Shift.

If you would like more facts and figures (like competitive V-8 speed and fuel economy test comparisons), write direct to: Chuck Marcussen, Director of Marketing, OMC Stern Drive Division, 3145 Central Avenue, Waukegan, Illinois 60085.

**FROM THE MAKERS OF
JOHNSON & EVINRUDE**

OMC
STERN DRIVE

*An available option.

One good thing leads to another.

Cherry
Brandy
Flavor.

Original Aromatic.



Now.
Cavendish No. 79.

Mixture No. 79

The most famous number in pipe smoking.

Plio-Nail. Tough as nails.

New Goodyear Plio-Nail™ panel adhesive develops sufficient strength to hold a 4 x 8 panel firmly in place—even without nails. Bonds wall panels, drywall, hardboard, corkboard or foam insulation to masonry, studs, subfloor, drywall or concrete. Goes on in one step. Shims automatically. Eliminates nail pops. Available in stores everywhere. Stick with it.



Build Your Own Pre-Cut HEIRLOOM GRANDFATHER CLOCK



Compare feature by feature

- Solid 3/4" kiln dried wood
- All parts precision pre-cut, mitred and dowelled
- Lumber sanded on all sides
- Fully Assembled/precision-made West German movements
- All hardware included—even screws

Write now for
**FREE Color
Brochure of
complete line of
Grandfather and
other clocks.**

**HENTSCHEL
CLOCK COMPANY**
Department 602-F
16 Atlantic Avenue
So. Dennis,
Mass. 02660

ACCIDENT YOU'D NEVER FORGET

(Continued from page 126)

the Calspan course profit from the experience?

"Most of them told us they learned a lot," says Roy Rice, "even though our figures show that most of them made more mistakes the fifth time around. Still, they couldn't avoid learning one big lesson and that was: The worst thing to do is give up—freeze. *Hang in there; keep on trying to save the situation, even when it seems too late—whether you're in a skid, pulling the wheel hard over in a desperate effort to avoid an obstacle, a pedestrian or another car.*

"Remember: The people in our tests didn't wring out the car hard enough in evasive maneuvers. If they had, there wouldn't have been so many 'accidents.' " ★★★

NEW PLUSH POWER

(Continued from page 97)

165-hp Six. MerCruiser V8s include 170, 188, 233, 255, 280 and 395, with 233, 255 and 350-hp inboards and a 375-hp jet package.

■ **OMC Stern Drive** in Waukegan, Ill., will have a broad selection of 13 sterndrive models with power options up to its new 235 V8 with SelectTrim or fixed mount. Others include 175, 190 and 225 V8s, four-cylinder inline 120s and 140s and a 165-hp Six. OMC jet packages include a 140 Little Squirt for boats to 18 feet, the JX-245 Honker and JX-290 Stomper with Corvette power to spare. OMC inboards and vee-drives come in 230 and 260-hp engines with five different gear ratios.

■ **Scientific Engineering's** Turbo-Marine, Salina, Kans., is packaging jet drives with Ford V4 104-cu.-in. engines, or the 302 or 351 Fords. Volvo Penta has the standard 280 sterndrive for all powerplants, or a smaller model for 7.5 to 23-hp sail auxiliaries. ★★★

'MACHINE-GUN' LIGHT KITS

(Continued from page 101)

sible, or it will be overexposed and wash out any objects in front. Studio photographers use black velvet; you can get the same effect by shooting outdoors at night, keeping well away from any background object that could reflect light.

Some cautions to observe when using these lights: Never look directly at the light when it's flashing; turn the light off at once if you feel dizzy or ill at ease, and never use it in the presence of an epileptic. The Archer-Kit manual spells out these cautions in detail; Graymark's just tells you not to look directly in the light. ★★★

Don't let those "Automatically Adjustable" shocks take you for a ride.

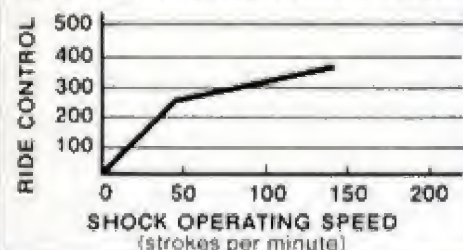
You hear a lot of big talk about some shock absorbers being "automatically adjustable." But put 'em next to Gabriel Striders, and they don't sound so adjustable any more.

Striders give three completely different ranges of riding comfort and driving control—Regular, Firm and Extra Firm. When you "twist 'n click" Striders to the ride you want, you actually change the valve settings inside.

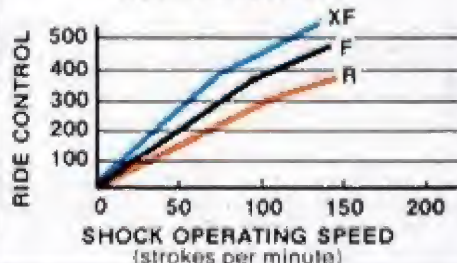
The other shocks have one, fixed valve setting. They can only give one range of control, one kind of ride. And while they talk about "automatically adjusting to changing speeds and road conditions," the fact is, that's what *all* shock absorbers do.

Get *real* adjustability for your car. Custom tune your suspension to the ride you want with Gabriel Striders. America's best selling adjustable shock. We won't take you for a ride. But we will give you three of them.

TYPICAL
"AUTOMATICALLY ADJUSTABLE" SHOCK



GABRIEL STRIDERS



The ride control of all shocks varies according to operating speed. "Automatically adjustable" shocks, with one, fixed valve setting, have only one range of ride control. Striders have three valve settings, three completely different ranges of ride control.

Gabriel® Striders®

King of the Road





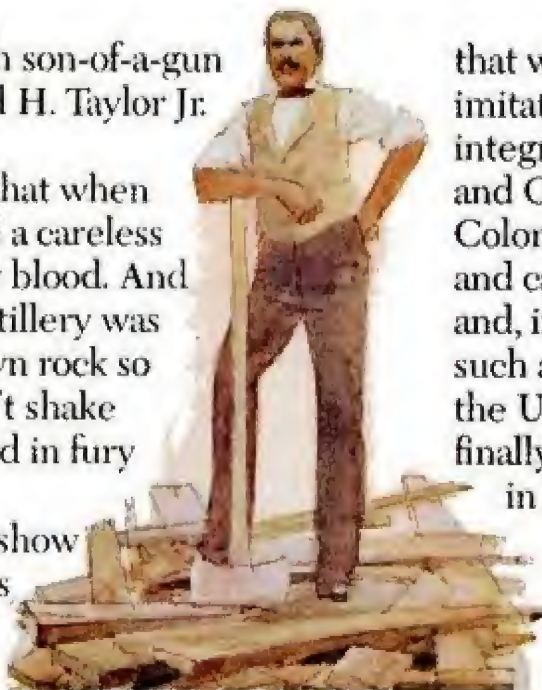
**Colonel Taylor was hard
to get along with.**

That's why his Bourbon isn't.

What a tough son-of-a-gun Colonel Edmund H. Taylor Jr. could be!

People said that when he tongue-lashed a careless supplier, he drew blood. And that his castle distillery was built of thick-hewn rock so the walls wouldn't shake when he exploded in fury at shoddiness.

The records show that even after his Old Taylor was famous, he smashed all his wooden stills to splinters and built new stills of copper because copper — and damn the expense! — produced better Bourbon. And they show



Even after Old Taylor was famous, the Colonel tore down his wooden stills and rebuilt them of copper.

that when cheap-jack imitators threatened the integrity of Bourbon and Old Taylor, the Colonel badgered and cajoled and, in all, raised such a ruckus that the U.S. Congress finally intervened — in his favor.

No, the old man wasn't always a pleasure to be with. But his whiskey was a constant delight: gentle as you sipped it, warm and friendly inside.

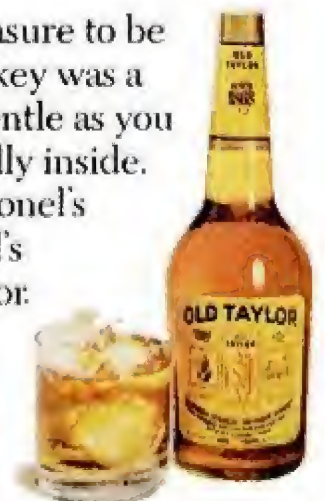
We still make the Colonel's Bourbon with the Colonel's painstaking care. Old Taylor. *His* Bourbon. Try it.



The Colonel even badgered Congressmen to protect the integrity of his Bourbon.

Old Taylor. It's easy to get along with.

Kentucky Straight Bourbon Whiskey, 86 and 80 Proofs. The Old Taylor Distillery Co., Frankfort & Louisville, Kentucky



Morse code. Many conversations go on at the same time.

Since the satellites are at altitudes of 900 miles, an Earth station can be up to 2450 miles away from an OSCAR and receive signals from it when it comes over the horizon. Communication is possible with another ham up to 4900 miles away when the satellite is in view of his station at the same time. The satellite is constantly moving along its orbital path so stations in different parts of the world come in and go out of view of the satellite. A very large portion of the globe is available for communication for the ham operator who waits for OSCAR to be in just the right spot. It's amazing too that this coverage is possible with rigs that are small in size, power and cost.

Simple antennas

Fancy equipment is not needed to hear OSCAR. All I use is the short-wave receiver and a wire antenna strung between two chimneys on my house. My antenna is a simple dipole constructed with 8 feet of wire attached to each end of a center insulator. The lead-in attaches to each "branch" at the center insulator.

Bob Peters, operator of amateur radio station K3EZZ in State College, Pa., listens to OSCAR with a 25-year-old shortwave radio and a single long-wire antenna running from his ham shack out to a tree.

Once in a while a radio will sound dead on 10 meters and need some extra pep. To give their radios a boost, hams add small preamplifiers between antenna and receiver. They are available from radio stores in kits for \$6 or ready-made for \$12. Adding such a preamp would give a basic OSCAR Earth-station Cadillac quality. A preamp usually is not needed to hear the stronger signals passing through OSCAR.

One feature needed in the receiver is a "BFO" (beat frequency oscillator) or other means of detecting single sideband (SSB) voice communications and the beep-beep of Morse code. OSCAR can hear and retransmit AM, FM, SSB and code. But AM and FM transmissions suck too much current from OSCAR's batteries. So SSB and code are the hams' favorite modes of operation.

Here comes OSCAR

It was exciting when I first fired up my own Earth station. The 10-meter band was silent as the satellite crossed the equator and moved north toward the United States. Suddenly, as the satellite came over my horizon some 2450 miles southwest of my sta-

tion, the band came alive with signals. There was the Morse-code telemetry beacon on 29.502 MHz. Morse code and SSB voice conversations were everywhere between 29.400-29.500 MHz. OSCAR 7 was out over the Rocky Mountains streaking north at four miles per second.

I knew my signal should be in the area of 29.480 MHz so I tuned there and transmitted a long string of "dits," the letter "E" in the dit-dah of Morse code. And there it was. My own dits coming back to me from 900 miles above the Rocky Mountains. Quickly I sent a simple "CQ de K3RXK," meaning, "Hey, you guys, how about somebody talking to me." Immediately Gordy Wightman, operator of ham station VE5XU who had been listening by coincidence on my frequency, came right back to me, "K3RXK de VE5XU." I got goosebumps from the excitement.

Here I was. A licensed ham for 21 years. Eighteen years after Sputnik. I was freely using an orbiting satellite floating across the sky out west more than 1000 miles from my central Pennsylvania home, working another fellow all the way up in Regina, Sask.!

Gordy and I talked for about five minutes, exchanging signal reports while the satellite raced 1200 miles farther north. OSCAR 7 was in view of my Earth station only 20 minutes on that pass. Listening for the satellite and for my own signals, and talking to Gordy, I used up the time.

Next evening, OSCAR 7 came over again and Ed Bizub, WA2CBB of Clark, N.J., came back to my call. And yet another thrill was coming. My first "DX" distance contact came on the third night. OSCAR 7 was over the North Atlantic when G3IOR in Norfolk, England, came back to my CQ. Again the rush of excitement was overwhelming.

My first use of OSCAR 6 came shortly after I talked with G3IOR. OSCARs 6 and 7 are in similar orbits, one trailing the other. After a satellite crosses the equator, it passes over the United States from south to north.

The Earth is moving under the satellite so OSCAR seems to be moving to the west. If the satellite comes up over the Southeastern United States one hour, it will come northward over the Rocky Mountains two hours later. And two hours after that it will come north over the Pacific Coast. And so on, around the Earth in a corkscrew pattern, daily covering the United States and the world.

Because of the spinning Earth, a satellite half the time ends up looping across the equator south-to-north

(Please turn to page 132)

How to get rich

**START YOUR OWN BUSINESS
RIGHT FROM YOUR HOME—
AND MAKE A FORTUNE
IN MAIL ORDER!**



Mail Order Beginners Get Cash by Mail!

Have you ever thought of operating a little mail order business of your own? Something you could start on a shoestring right from home in your spare time. It's a fabulous business!

Bob Carter of Newark, N.J. ran his first small mail order ad in House Beautiful magazine—offering an auto clothes rack. Business Week reported that his ad brought in \$5,000 in orders. By the end of his first year in Mail Order, he had grossed over \$100,000!

Another beginner—a lawyer from the mid-west, sold a mail order item to fishermen. Specialty Salesman magazine reveals, "he made \$70,000 the first three months!"

There is no other business where you can make a fortune so fast. Come up with a "hot" new item . . . and WHAM!

It strikes like a bolt of lightning!

Millions of people read your ad and suddenly, you are swamped with cash orders from all over the country . . . MORE MONEY in 60 days than you could earn in a lifetime!

Like the Vermont dealer who ran one ad in Sports Afield magazine. His ad pulled 22,000 orders—over A HALF MILLION DOLLARS IN CASH!

Yes, Mail Order is the fastest-growing, most profitable business in America! And now with the population explosion . . . the huge teenage market . . . and more people moving to the suburbs—we are on the verge of the BIGGEST BOOM in Mail Order history!

Free

If you are sincerely interested in starting a lucrative business of your own ACT NOW! We can help you get rich in Mail Order just as we've helped others. Mail the coupon or send a postcard. We'll send you a free book, catalog, ads and complete facts about our offer. No salesman will call. No obligation. You don't need previous experience but you must be over 21. Write to:

Mail Order Associates, Inc., Dept. 138
Montvale, New Jersey 07645

Mail Order Associates, Inc., Dept. 138
Montvale, New Jersey 07645

Please rush full details immediately.

Name

Address

City

State Zip

NOW!

From the makers of the
World's most highly regarded
Industrial Lubricants!

PROFESSIONAL LUBRICANTS

for your



HOME



CAR



CYCLE



CAMPER

LUBRIPLATE

Spray Lube 'A'

Sprays like a fluid, builds up like a grease. Lubricates hard to reach areas. Sticks and stays where you spray it! Waterproof! Lasts many times longer than "lightweight" household oil! Excellent for overhead doors, slides, rollers, pulleys, cables, hood or trunk locks, latches, door hinges, metal window tracks, mowers, bikes, fishing reels, guns. Protects battery and starter cables, linkages, trailer hitches and tools against rust and corrosion.



AUTO-GUARD

An excellent "wet start" product to remove moisture from distributor caps, spark plugs, generators, alternators, ignition wires and carburetors for quick engine starts in wet, damp, weather. A super penetrating type oil to loosen rusty, frozen nuts and bolts, clamps, straps, linkages, and cables. Spray on PCV Valves, heat risers, hinges, metal surfaces, chrome, locks, springs, nuts, bolts, mechanics' and garden tools to stop rust and corrosion.



LUBRIPLATE DIVISION
FISKE BROTHERS REFINING COMPANY
NEWARK, N.J. 07105/TOLEDO, OHIO 43605

Sold By: Auto Parts Jobbers, Boat Marinas,
Home & Auto Stores, Sports and Camping
Departments of Leading Retailers

SATELLITES MAKE HAM LISTENING MORE FUN (Continued from page 131)

on the far side of the globe. When this happens, OSCAR comes up over top of the North Pole and down over the United States from north to south. A new orbit starts whenever and wherever OSCAR passes across the equator south-to-north.

Talk to each other

Since OSCARs 6 and 7 are in slightly different orbits, they are not overhead at the same time. The distance apart varies. Twice a year they are so close hams can talk to each other through both at the same time. A signal goes up to OSCAR 7 and is retransmitted to OSCAR 6 which retransmits the signal to Earth.

A half-hour after I chatted with G8IOR in England, OSCAR 6 came over my horizon. My first contact through that satellite was with Dick Smith, W1FTX of Winsted, Conn.

Contacts through both satellites in the weeks following were with amateurs in California, Florida, Illinois, Kansas, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New York, Ohio, Pennsylvania, Tennessee, Texas, Virginia, Wisconsin and Washington. Hams are on in all states and everybody has an equal chance to hear the satellite.

Like OSCAR 7 signals from OSCAR 6 come down on the 10-meter band at frequencies between 29.450-29.550 MHz. Its beacon is at 29.450 MHz. Telemetry beacons from the satellites are strings of numbers in Morse code that can be deciphered easily to find out temperatures, voltages and current drain in the satellites. OSCAR has an alarm clock on board to remind when internal house-keeping chores are to be done. It's easy to find out what time OSCAR thinks it is from the telemetry.

Emergency communications

The satellites are being tested in several serious experiments. Medical electrocardiograms (EKGs) have been sent via OSCAR 7 from George Dillon, W6ELT at Santa Ana, Calif., to Len Aberbach, K3ATA, at the National Institutes of Health in Washington, D.C.

Miami hams maintain a hurricane watch and weather bulletins are transmitted via satellites. Techniques are being worked out to use the satellites to find downed aircraft. Portable Earth stations in suitcases are being built to provide emergency communications at earthquake and other natural-disaster sites on short notice anywhere on the globe.

The American Radio Relay League (ARRL), national organization of radio amateurs, makes available free

to interested teachers a curriculum book for classroom use of OSCAR in teaching math, physics, astronomy, communications, electronics and space science. The book explains in elementary language how to use a simple shortwave receiver to teach and learn what keeps a satellite up, what governs its speed and how to use OSCAR for many math and science classroom activities. Hundreds of school students already have participated in the program.

Students using the educational package learn how to determine the satellite's period, how long it takes to go once around the globe; its increment, how many degrees farther west it will be when it crosses the equator next time; and its inclination, the angle at which the satellite path crosses the equator.

OSCAR 6 has a period of 114.99449 minutes, an increment of 28.7486° per orbit, and an inclination of 101.6015°. OSCAR 7 has a period of 114.94478 minutes, an increment of 28.7362° per orbit, and an inclination of 101.7010°.

For more information about the educational program write the ARRL at 225 Main St., Newington, Conn. 06111. For more about when, where and how to listen to OSCAR, write the Radio Amateur Satellite Corp. (AMSAT), Box 27, Washington, D.C. 20044. AMSAT is an international organization of hams and listeners interested in amateur satellite work. It sponsors the satellites and coordinates activities.

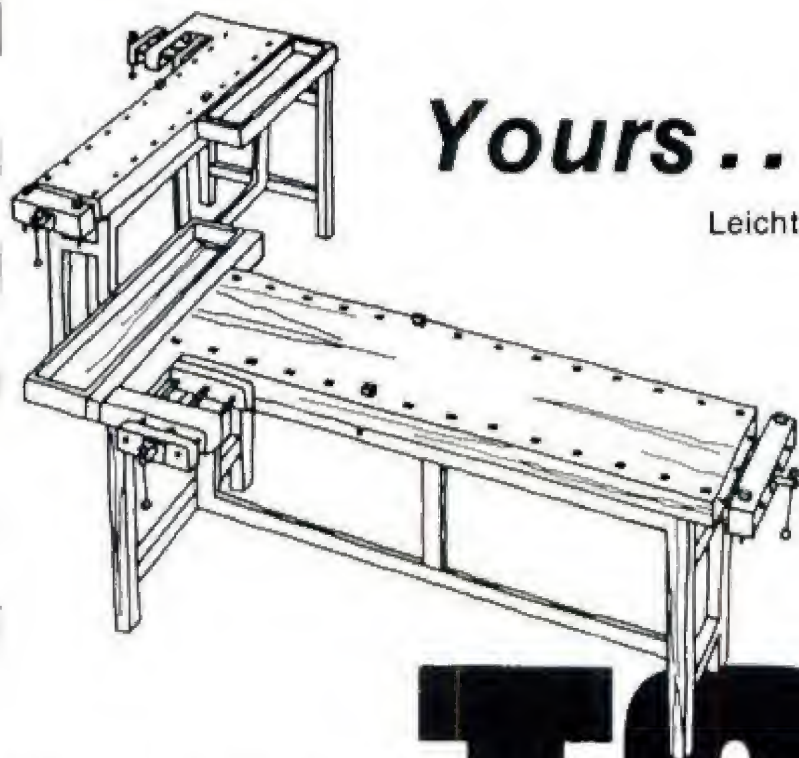
OSCAR Earth stations need not be in houses. Fred Merry, W2GN of East Greenbush, N.Y., makes contacts through OSCAR while driving his car. Dick Long, WA4JID of Plantation, Fla., talked with hams from on board his sailboat while on an ocean trip down through the Florida Keys.

Sun-revitalized batteries

OSCARs are powered by rechargeable nickel-cadmium (nicad) batteries, revitalized by the sun through solar cells on the satellite skins. OSCAR 7 has many more cells so its power supply is stronger. OSCAR 6, with fewer solar cells, is turned off periodically to conserve energy.

OSCAR 6 has only one rebroadcaster on board. It is only capable of hearing signals in the two-meter ham band and retransmitting them on the 10-meter amateur band. OSCAR 7, on the other hand, has two repeaters aboard. One day it hears the two-meter band and retransmits on 10 meters. The next day it hears signals

(Please turn to page 134)



Yours...FREE...

Leichtung's new 48 PAGE catalog of both unique and basic tools from America's leading seller of *quality* handtools.

Over 200 NEW items for the man who enjoys working with his hands... almost 400 items in all.

LEICHTUNG ^{INC.}

TOOLS

Tools *can* make the difference.

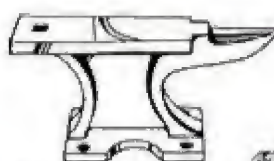
You *can* do better work with the right tool for the job.

Treat yourself to the pleasure of owning the world's finest. If they come from Leichtung you know your tools are the best from the great tool centers of the world.

WEST GERMANY



SPAIN



SWEDEN



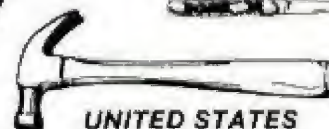
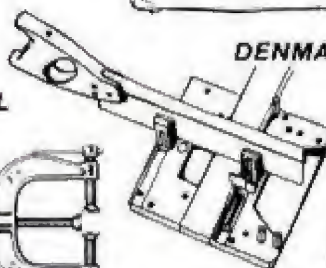
PORTUGAL



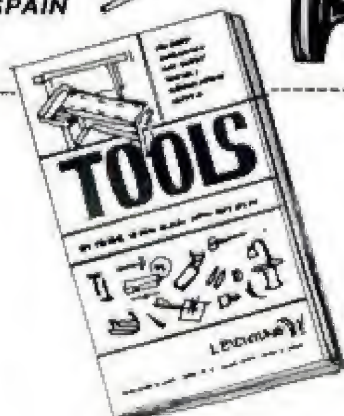
ENGLAND



DENMARK



UNITED STATES



Yes, Ric Leichtung...

Please send me **FREE** your **ALL NEW** 48 page catalog with over 200 new items from the world's finest toolmakers.

Name

Address

City State Zip

Mail to: Leichtung, Inc., 701 Beta Drive #17PM, Cleveland, Ohio 44143

(This is the address of our large, new showroom and warehouse which we invite you to visit after January 15, 1976.)

Blow Up Your Bed [WITH] AIR

**INFLATE-A-BED®
INFLATE-A-BED®**



- For Sleeping
- Camping
- Boating
- Relaxing
- Sunbathing
- A Super Water Raft
- Playing

The Only Guest Bedroom You Store On A Shelf

Inflate-A-Bed—the ultimate in a sleeping experience. It's a luxurious velvet tufted air coil bed you inflate in minutes with a vacuum cleaner (comes with adapter), or any air pump. Use it as your permanent mattress or store it on a shelf for overnight guests. Use it in a camper, or doze your way across a lake on it (the soft, flopped finish prevents sticking or burning while sunbathing).

Inflate-A-Bed takes the sea-sickness, immobility, and water out of waterbeds, but gives the same relaxing give-and-take feel. The specially patented "air coil" construction, consisting of individual polyvinyl air support coils, supports your body evenly—you don't sink down, and the sides don't fly up as with inexpensive vinyl plastic furniture. No frame or innerspring is needed yet it is more comfortable than a conventional mattress. A Full Warranty is included.

Inflate-A-Bed—Incredibly light, incredibly tough (20 mil Poly Vinyl Chloride). It cleans easily with soap and water—the color does not wash out. An exciting new way to sleep, relax, and play. Try one for 2 weeks—no obligation.

Please send me the following Inflatable bed(s). If not fully satisfied I can return within 2 weeks for an immediate refund.

- ☐ Twin Size @ \$59.95 ☐ Full Size @ \$79.95
☐ Queen Size @ \$89.95 ☐ King Size @ \$114.95

(Add \$4.95 for shipping and handling)

- ☐ Check or M.O. Enclosed (Ill. residents add 5% tax)
☐ Charge my Credit Card Checked Below:

- ☐ American Express ☐ BankAmericard ☐ Carte Blanche
☐ Diners Club ☐ Master Charge

Credit Card # _____

Master Charge Bank # _____ Exp. Date _____

Name _____

Address _____

City _____ State _____ Zip _____

Signature _____

Send Coupon To:
CONTEMPORARY MARKETING INC.
790 Maple Lane, Bensenville, Ill. 60106
Call Toll Free: 800-323-2406 Ill. Call: 312-595-0461

NEW RUBBER STAMP BUSINESS PAYS BEGINNERS UP TO \$16.50 AN HR. Start at Home in Spare Time

The multi-million dollar Rubber Stamp business—once controlled by a few big companies—is now being taken over by small operators—one in each community throughout the United States. Men and Women who have this inexpensive machine can turn out huge quantities of Rubber Stamps with special wording that buyers once were forced to buy from big cities. Material costing only 27¢ makes a stamp that sells for \$2.75. The machine that does the work is simple and easy to operate and it turns out as many as six Rubber Stamps at a time, each with different wording such as names, addresses, notices, stock numbers, prices and other "copy" needed by offices, factories and individuals. Working full capacity, it can earn as much as \$33.00 an hour for the operator! Now you can get into the big-pay business yourself, with your own home as headquarters. You don't need experience. We supply everything, including complete instructions and eight ways to get business coming in fast. We even help finance your start! Start making up to \$16.50 an hour from the very beginning. Cash in on the profitable Rubber Stamp business in your community, right away. We'll mail full particulars FREE and no salesman will call. Be first in your locality. Rush coupon today or send your name on postcard to:

RUBBER STAMP DIV., Dept. R-2-FB
1512 Jarvis Avenue • Chicago, Ill. 60626

THIS LITTLE TABLE TOP MACHINE MAKES EVERYTHING SIMPLE & EASY



MAIL THIS

RUBBER STAMP DIV.
1512 Jarvis Ave., Dept. R-2-FB, Chicago, Ill. 60626

Please rush full particulars about your financing plan and the little machine that can get me started in the profitable Rubber Stamp business at home in spare time. Everything you send me is FREE and no salesman will call.

Name _____
Address _____
City _____
State _____ Zip _____

Repair any watch
... LEARN AT HOME

Unique Sweeney System develops your watch repair skills step by step at home in spare time. No previous experience needed. Low tuition. Free sample lesson and full information.

CHICAGO SCHOOL OF WATCHMAKING
Dept. 126, Fox River Grove, Ill. 60021

Amazing Citizens Band Radio Secrets

Learn the CB language and secret codes. Talk to Truckers and other CB Motorists. Be able to avoid traffic violations by listening to secret trucker slang and CB Codes. Use the codes to call for help in case of Emergency. Receive over 100 Trucker terms, 10-Codes, and a special map showing truckers' shortcuts in 48 states. No CB enthusiast should be without this valuable information. Send Only \$3.00 to CB Communications Dept. P. Box 30205 Albuquerque, NM 87110. Be a first class CB Operator!

Learn CUSTOM PICTURE FRAMING
For Fun Or Profit! Let Professionals show you the trade secrets of custom portrait and picture framing. It's a fascinating, satisfying craft—yet a Framers' skills are worth \$8 to \$10 an hour or more!

Start a clean, quiet business you can easily manage from home in part time — we'll show you how, help you every step. Write for complete details—no obligation and no salesman will call.

FRAMECRAFTERS, Dept. BPP P.O. Box 14 1205 W. Barkley, Orange, CA 92666

MAKE MONEY! REPAIR HYDRAULIC JACKS

Earn while you learn at James Williams of Jacks in Gas and Auto Service Stations, Trucking Firms, body shops, riggers, factories and farms need servicing... most of which you can learn to repair. We show you HOW. Start spare time in your basement or garage. Big opportunity for mechanics! KCI HOME! Write for folder No. PM-2, and free bonus offer.

Hydraulic Jack Repair Manual Co., Inc.
P.O. Box 3 • STATEN ISLAND, N.Y. 10314

HAM LISTENING

(Continued from page 132)

at 432 MHz in the 70-centimeter band, and retransmits them to Earth in the two-meter band. Shortwave receivers hear only the 10-meter band, not two meters, so OSCAR 7 can be heard with a simple receiver only every other day. OSCAR 7 signals on alternate days coming down on two meters can be heard by hooking a converter between antenna and receiver. Converters start at \$40.

When to listen

A sure-fire way to hear OSCAR is to turn on a shortwave receiver any night except Tuesday. OSCARs pass overhead at least twice during an evening. OSCAR 6 will be turned on for hams to communicate through on Sunday, Wednesday and Friday night local time in the United States. OSCAR 7 will transmit on 10 meters on odd-numbered days of the year.

A pass over eastern North America will take place between 7:00 and 9:00 p.m. Eastern Standard Time. A pass over western North America will take place between 9:00 and 11:00 p.m. EST (6:00 to 8:00 p.m. PST).

Select the band on the receiver for coverage of the 10-meter ham band. Set the dial at about 29.5 MHz. Turn on the receiver's "BFO" or turn a "mode" switch to "CW" or "code" or "SSB" position. When an OSCAR satellite passes overhead or near your location you'll be able to hear at least the stronger signals coming through.

OSCAR 6 was designed for one year of life. However, last fall hams around the world celebrated its third birthday. OSCAR 7 also will be in orbit for years. And AMSAT is building a new generation of OSCARs to extend communications time to hours. They will have kick motors to push the satellites into elliptical orbits taking OSCAR as far out as 20,000 miles over the Northern Hemisphere. These satellites will be in view of Northern Hemisphere Earth stations up to 12 hours and out of sight behind the Earth only about one hour. The ability of hams to help out in emergencies and natural disasters, transmit medical data or locate downed aircraft will be even greater.

So dust off your shortwave receiver. Hang out a wire antenna. Cock an ear toward OSCAR. You might hear WA4JID on the ocean, W2GN in his car, EKGs from California, hurricane bulletins from Florida, G3IOR completing an extraordinary 6000-mile conversation with W6CG, or even my station, K3RXX, as I talk with new states and countries. There's plenty of excitement when you ride along with the ham satellites. ★★

How to help avoid The Unexpected Bill.



In today's economy, when it's a real battle handling the bills you expect, the last thing you need is an unexpected bill.

Well, Quaker State Motor Oil can help.

Regular changes with Quaker State can help you avoid unexpected, expensive engine repair bills.

Made from Pennsylvania Grade Crude Oil, the world's choicest, Quaker State oils are fortified by oil specialists who have always made high quality a tradition.

And today, when you need Quaker State more than ever, it's available in more places than ever.

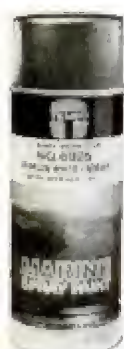
DeLuxe, Super Blend or HD, whichever type is best for your kind of driving.

Quaker State can't stop the bills you expect.

But it sure can help you avoid the unexpected.

Quaker State your car to keep it running young.

THREE WAYS TO CUT YOUR BOATING COSTS



Marine Spray Paint Renews Motors

The finest from the marine spray paint specialists. Use to touch-up or repaint outboard and stern drive motors. Guaranteed to perfectly match original colors. Available for all popular motor makes, all ages.

Testit-Flushettes® Make Tuning and Clean-

ing Easier
Test-flush your motor on dry land. Check, tune and make minor adjustments without removing motor from boat. Flushes motor clean of salt, sand, silt, etc. after use. Reduces corrosion, extends motor life.



Tiltomatic® Low Cost Motor Tilt



Not a shock. It's a gas spring. Can be attached in minutes with ordinary tools. Provides the advantages of power-type tilt devices at a fraction of the cost.



And More

Dozens of other cost-cutting boating products from America's foremost marine accessory supplier, pictured and described in new 1976 catalog. Available for just 50¢.



TEMPO PRODUCTS COMPANY
6200 COCHRAN ROAD
CLEVELAND, OHIO 44139
(216) 248-1450

Find 50¢ enclosed for complete accessory catalog.

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

boats'76



Sport Convertible 25-footer, the new AMF Slickcraft 255 has inboard power for family cruising and fishing, with four berths and a flush-deck self-bailing cockpit.



Pioneer from Kayot is called the first do-it-yourself cabin deckboat. Assembly is reported to take two workers four hours. Built on 28-foot pontoons, the 8x24 deck supports a prefab 8x12-foot cabin built with standard tools for budget boating.



Flotation pontoons turn a tippy canoe, like this 13-foot Michi-Craft aluminum model, into stable base for fishing. Michi pontoons attach to other canoes as well.

THE CLASSY PERFORMERS

(Continued from page 93)

storage compartments. Large models have broad bow and stern casting platforms, and the biggest open offshore machines are seaworthy enough to challenge the fancy sport-fishing models out where the game-fish swim.

Almost any boat bigger than the smallest inflatables can be rigged now with a convertible top to keep off the sun. Add side curtains and an open cockpit can be enclosed into a cabin for your mini-cruiser. Though few boatmen find enough time for extended cruising, cabins and overnighting accommodations show new popularity and are featured in many models being introduced for 1976. Placement of the cockpit amidships in larger power and sail craft allows fore and aft cabins with privacy for two couples, another arrangement that is appearing on more and more models.

High performance leaders include the hot shallow-draft ski boats of the West Coast. And, again, the most outstanding machines of all come from Don Aronow of North Miami Beach, Fla., builder of the amazing offshore racing Cigarettes. ★ ★ ★



Inflatables are often light enough now for backpacking, big enough for long inland passages. Ten-foot, 21-pound Pyrawa-5, from Leisure Imports, is one of 13 models.



For high-performance sailing, MiniSprint Mark II, imported by KMS Marine Ltd., has open self-bailing transom, sliding seat.



Cruiser that can sleep six in 28 feet, new Mega sedan from Uniflite has dual flying bridge and cabin controls, twin inboard power through V-drives, full galley with electric refrigeration, hull of fire-retardant fiberglass, is priced around \$34,000.



Family comfort when cruising is design goal of SS245 Sedan by AMF Slickcraft. In forward cuddy cabin are twin V-berths, head, hanging locker, while hardtop-covered forward cockpit has helm, galley, dining area. Price of 24-footer is \$16,400.



Large cockpit and small cuddy cabin combine in new 26-foot Sport Convertible from Bertram Yacht. Range is 230 miles with speeds to 40 mph using twin sterndrives. Galley/dinette, top and curtains are among options for 84-sq.-ft. cockpit space.



Trailer cruiser trend has a new addition from MFG with the Morrison 25. Though it's 25 feet long, beam has been kept to 8 feet for trailering. Single or twin sterndrives are supplied from 100-gal. fuel system. Camper curtains are optional.

Richard Petty asks:

"Why pay repair bills, when you can learn to fix your own car... at home, in your spare time?"

Learn Automotive Servicing the NRI way!

"Knowing how to take care of your own automobile can mean real money in your pocket. You save every time the car needs a tuneup, and a little preventive maintenance keeps it running a lot longer between major repairs. And with the cost of gas what it is, being your own tuneup man can mean smaller gas bills each month.

The best way I know to learn auto repair at home is NRI's home training. It's the most up-to-date complete course in Auto Mechanics I've ever seen.

Hands-on training... with diagnostic equipment

NRI offers two courses: a Basic Tuneup and Repair Course, and a complete Master Automotive Technician's Course. Both offer you essential training and diagnostic equipment for under-the-hood experience.

The 30 lesson Basic Tuneup and Repair Course tells you all you need to know to perform

Richard Petty,
America's Winningest
Stock Car Driver
and NRI
Automotive
Consultant



most upkeep jobs. In addition to NRI's unique personal services and "bite-size" texts, you get eight important service items, including a Dwell Tachometer, AC Power Timing Light, Volt Amp Tester, and Tune-Up Tool Kit.

How to become a professional mechanic

NRI's Master Automotive Technician's Course is designed for the man who wants to go all the way... to be able to service and repair every component and every system in the automobile. In addition to the 70 lessons, you receive ten pieces of auto service equipment, including a Dwell Tachometer, AC Power Timing Light, Volt-Amp tester, solid-state Ignition Analyzer Scope, and a complete set of tools. You pay nothing extra for the tools and equipment, and they're yours to keep." SEND FOR FREE CATALOG TODAY!



You get all this equipment and more with the NRI Master Automotive Technician's Course... including NRI's exclusive Achievement Kit, and 70 profusely illustrated "bite-size" lesson texts.

NRI
SCHOOLS

McGraw-Hill Continuing Education Center
3630 Wisconsin Avenue, Washington, D.C. 20018
Check below for your free Automotive catalog. Or select one of the other courses instead. NO SALESMAN WILL CALL.

946-028

☐ **AUTOMOTIVE MECHANICS COURSES**

☐ TV/Audio, Communications, and Computer Electronics Courses

☐ Air Conditioning, Refrigeration, and Heating Courses

Name _____
(Please Print)

Age _____

Address _____

City _____

State _____

Zip _____

☐ Approved for career study under GI Bill. Check for details.

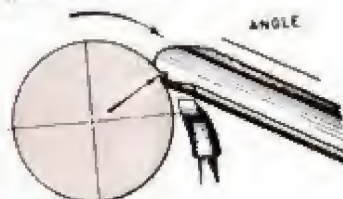
Accredited Member National Home Study Council

YOURS FREE!

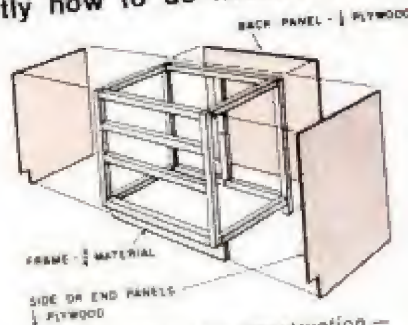
FEIRER CABINETMAKING AND MILLWORK

CABINETMAKING AND MILLWORK

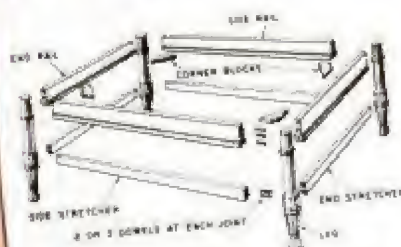
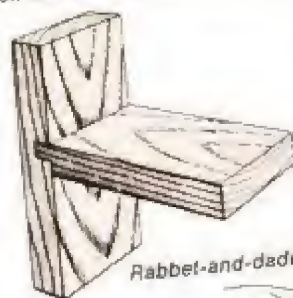
Thousands of explanatory drawings illustrate important points and show you exactly how to do hundreds of woodworking jobs...



The two basic methods of turning on a lathe: cutting (top) and scraping.



This is frame construction—often used in kitchen cabinets.



Exploded view of coffee table showing leg-and-nail construction using dowels and corner blocks.



- ★ Master cabinetmaking techniques.
- ★ Become an expert at using hand and power tools—even lathes, routers, shapers.
- ★ Learn how to build furniture, do fine interior work.

• 928 PAGES
• THOUSANDS OF EXPLANATORY PICTURES

MAIL ATTACHED CARD TODAY OR WRITE TO:

Take this giant \$23.50 treasury of creative woodworking **FREE**

when you join
Popular Science Book Club

If you're like most do-it-yourselfers, you probably do most of the routine woodworking jobs around the house yourself and *pay* to get the fancier work done. Yet the real satisfaction of woodworking comes from doing those fancy jobs yourself: making a wall of handsomely grained built-ins . . . wood-panelling an entire room . . . constructing a table with a perfectly matched veneer top. Yes, you can do all of these fancy jobs yourself *even without experience* when you've got a copy of **CABINETMAKING AND MILLWORK** as your guide.

Thousands of show-how pictures guarantee success!

This excellent, 928-page volume is a complete education in fine woodworking. It teaches you exactly how to do every step of every woodworking job you'll ever want to do. Thousands of explanatory pictures (including many full color photographs), charts, assembly drawings, finishing illustrations, construction details and more make this book very easy to use . . . *even for a novice!* (Think of the money you can save by building, repairing, finishing and refinishing all kinds of home woodworking projects yourself!)

Super clear how-to on tools, wood, construction, materials, finishing and much more!

CABINETMAKING AND MILLWORK is such a giant how-to book that it takes more than 1700 separate index listings just to tell you *where to look* for each step-by-step answer. You get more than 200 pages on how to use hand tools, power saws, shapers, routers, drills, boring machines, lathes and more, including how to sharpen and care for tools and make a variety of jigs for power tools.

**CLUB MEMBERSHIP SAVES YOU
UP TO 60% ON THE BEST
NEW DO-IT-YOURSELF BOOKS!**

• home improvement and repair
• house building • cars and car
repair • home workshop • appliance
repair • electronics • how things
work • protection • masonry and
carpentry • mathematics • science
and technology • space • more

More than 300 pages of specific construction plans for built-ins, kitchen cabinets, room dividers, tables, book-cases, furniture of every description. You even get a big wood finishing section with more than 100 pages of step-by-step how-to for all kinds of fine hardwoods and practical softwoods, plywood, composition, hardware, plastic laminates, etc. There's much, much more on how to read blueprints, how to make construction drawings, estimate costs, purchase materials at big bargains. Every detail you need to know is given the complete, clear-cut treatment in this excellent do-it-yourself book. You'll use it for years as one of your favorite "handyman's tools".

HOW POPULAR SCIENCE BOOK CLUB WORKS

- First, you get **CABINETMAKING AND MILLWORK** (regular price \$23.50) **FREE**, and your first Club selection, **BASIC HOUSE WIRING** (regular price \$9.95) for just \$7.95 plus postage and handling. That's \$33.45 worth of books!
- Then, about every four weeks, 14 times a year, you'll receive a bulletin describing the coming selection and alternate books also available at big discounts.
- If you want the selection only, do nothing. It will be sent automatically. If you don't want the selection or want an alternate, just indicate your wishes on the form that comes with the bulletin and return it by the date indicated.
- You need never buy a book if you don't want it. Your only obligation is to buy two additional books within a year. You may cancel your membership any time after that.
- You save up to 60% on every selection. Yet virtually every book is identical to the publisher's edition. Same paper, print, jacket. Same everything except price.



Your first Club selection is **BASIC HOUSE WIRING**

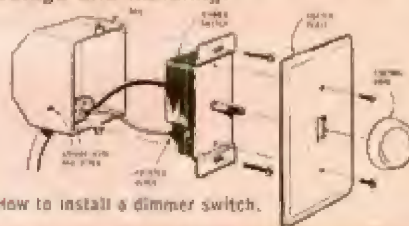
This brand-new book was custom written especially for Popular Science Book Club. It tells you everything you need to know to install, repair, improve and troubleshoot the entire electrical system in your home. How to determine wiring needs. How to draw up plans for "go-aheads". How to install complete systems. And how to wire low-voltage devices (intercoms, etc.), rural buildings, service entrances, workshops, heavy-duty machines, appliances—everything!

For example, how to rewire an old house inside and out. Hang a chandelier. Put in handy closet fixtures. Install dimmer switches, convenience outlets, three-ways. Set up an intercom. Install door chimes.

Ground your TV or radio antenna.

And this new book makes all these things easy. More than 500 illustrations guide you through each job step by step.

This is the latest, most complete book of its kind available. It regularly sells for \$9.95. Your PSBC price is only \$7.95 plus postage and handling.



How to install a dimmer switch.

POPULAR SCIENCE BOOK CLUB, P.O. Box 2006, Latham, N.Y. 12111

ONE-OF-A-KIND HOME BAR

(Continued from page 116)

special laminate cutter or by plane and file. In positioning laminate, butt the lower edge against the skirt and place the laminate just where you want it; once the cement-coated surfaces touch, you can't shift it. Contact cement bonds instantly. The edges of partition D and shelf C are painted along with the rest of the interior.

Next comes the two-piece hinged top: The front half has a cove around three edges; the rear half has one on outside edges only. A $\frac{3}{8}$ x 7/16-in. blind rabbet is cut along the back edge for the cabinet back. Band the edges with laminate first. Keep the strips even with the cove and trim them flush at the bottom. Cover top and bottom surfaces with laminate, but do not face the top of the rear half until it has been installed with finishing nails driven through the top into top edges of the end members. The nails will go through the banding previously cemented to the edges.

You now can cover the top surface. Try to buy a 1½-in.-wide piano hinge to join the two halves; the hinge leaves will cover the full thickness of

the plywood. If you have to settle for a ¾-in. hinge, you'll need to stain the exposed wood.

Doors are like picture frames

Doors and the drop counter are ¾-in. plywood, covered both sides with carpathian burl laminate and framed like pictures. The 1½-in.-thick pine molding is stocked at lumberyards as solid crown. You have to rabbet it and miter the corners. Cut the rabbet 7/16 in. deep to take the added 1/16-in. laminate thickness. Make your frames first, insert the covered panels in the rabbets and then apply laminate to the entire backs.

The drop counter is built up quite similarly; while the frames start as two separate assemblies with inserts, they become one when glued and butted end to end. Install a drop pull in the center of each frame, with bolt heads set flush. Then cover the backs of the two frames with one piece of black slate laminate so the drop-pull screws are concealed below the surface. The counter is hinged to shelf A with a brass piano hinge, and an 18-in.-long brass support chain is attached at each end with screws. Magnetic door catches keep the counter and doors closed. The

doors are hinged with 3-in. brass butts and fitted with Amerock's T-871 drop pulls in antique brass. The drawer rides smoothly on two ¾-in.-wide strips of scrap laminate cemented to the bottom of the compartment along the sides.

The refrigerator compartment accommodates an RV unit which requires a 2-in. air space in back and 4 in. above. The cabinet back is permanently attached after boring holes for water and drain lines and the refrigerator cord.

We used an antiquing kit called La Patique to add a chateau-walnut finish to the pine skirt and door molding. It's made by Salmon Products, Div. of Rub 'N Buff, American Art Clay Co., Indianapolis, Ind. 46268, and is a simple two-step process.

Here's how it's applied: Prime the bare wood with an enamel undercoater. When dry, brush on base latex (first coat in kit) and let this dry about 3 hours. Following the kit's instructions, wipe on sparingly a finish glaze with a lint-free cloth. For a realistic wood-grain effect, stroke the wet glaze lightly with cheesecloth. When glaze is thoroughly dry, you can apply clear urethane for a more durable finish. ★ ★ ★

Three of the first five national tournaments in 1975 were won in MonArk boats.

MonArk boats scored victories at Toledo Bend, Dardanelle and Bull Shoals. And MonArk's new 15-footer will be a tough competitor in '76. McFast 5. Lightning fast, fun to drive, and sensibly priced. Standard features include—

- Two aerated live wells.
- Built-in 18-gallon fuel tank.
- Metal flake deck and console.
- Four seats.
- Five storage compartments, including rod stowage.
- Trolling motor terminals.
- 85-horsepower rating.

MonArk builds eight fiberglass bass boat models (and 42 Aluminum Craft).



Ride with the winners.

Free catalog and address of nearest dealership sent upon request. Write or phone today. Let us be your builder.

P.O. Box 210
Monticello, Arkansas 71655
Phone 501-367-5361

MonArk
boats

Start your own money making business!

**Make up to \$12⁵⁰ an hour—
even while learning!**

*Train FAST
at home!*

*Get into this booming high-profit business that's
Easy to learn — Easy to do — Easy on You!*

Never before have money-making opportunities been so great for qualified Locksmiths. Now lucrative regular lock and key business has multiplied a thousandfold as millions seek more protection against zooming crime. Yet there's only one Locksmith for every 17,000 people!

Start Collecting CASH PROFITS Right Away

You're "in business" ready to earn up to \$12.50 an hour a few days after you begin Belsaw's shortcut training. Take advantage of today's unprecedented opportunities in Locksmithing for year-round EXTRA INCOME in spare-time—or fulltime in a high-profit business of your own. Hundreds we've trained have done it. So can YOU! All tools plus professional Key Machine given you with course. These plus practice materials and equipment, plus simple, illustrated lessons, plus expert supervision, plus business-building guidance will enable you to KEEP THE MONEY COMING IN! Ideal for retirement—good jobs too.

SEND FOR EXCITING FACTS—No Obligation

Discover what's in Locksmithing for you—how Belsaw's Master-Locksmith-approved training can give you the skill you can depend on to EARN MORE—ENJOY LIFE MORE.

**No Extra
Cost!**



Included With Your
Locksmith Training

**BURGLAR
ALARM
and SECURITY
SYSTEMS**

training. Covers all phases of Burglar, Hold-Up and Fire Alarm servicing and installation. This valuable and timely instruction includes all special tools and supplies. ONLY Belsaw offers such extensive training in this rapidly expanding field as a part of your Locksmith training.

ADVANCED Locksmithing!
How to change combinations, install and service Safe, Vault and Bank Safe-Deposit Box locks. You learn-by-doing on the locks that we supply. You'll find it fascinating and highly profitable work.

**Be
Your
Own
Boss!**



**BE
A
LOCKSMITH!**

"I began earning
right after starting...
...made \$1,200 while
I was still learning."

HARVEY COLE, Channahon, MI 49020

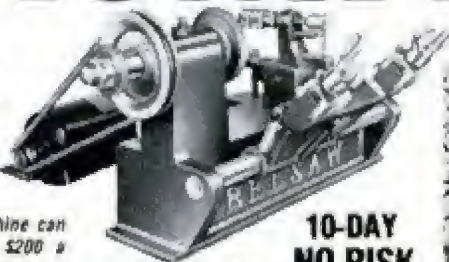


**PRO KEY
MACHINE
YOURS
TO KEEP!**

This Pro Key Machine can
alone add up to \$200 a
month to your income...
and it won't cost you a penny
extra with your training.

Find out all about it!

Just fill in and mail coupon below (or
send postcard) to receive full information
and details by return mail. **DO IT TODAY!**



**APPROVED
Under GI Bill
FOR
VETERANS**

**10-DAY
NO RISK
TRIAL!**

Send for
details!

**RUSH
COUPON!**

**ALL SPECIAL TOOLS
AND EQUIPMENT INCLUDED!**



BELSAW INSTITUTE

106F Field Bldg., Kansas City, Mo. 64111

**Hundreds of Belsaw trained men
have succeeded in this fascinating
and highly profitable field...**

"I opened my own business, spare
time, seven months after I enrolled and
made a profit of \$329 for the first week."

B. A. Deberry, Littleton, Colorado



"No more hard, nasty work for me.
Now I have my own business and with
hardly any effort I average around \$50
a day. Thanks for my new start in life."

Sam Walker Prichard, Alabama

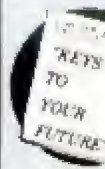


There is NO OBLIGATION and NO SALESMAN Will Call—ever!

**RUSH COUPON TODAY
FOR THIS FACT-FILLED**

**FREE
BOOKLET!**

Tells how you quickly
train to be your own boss
in a profitable Sparetime
or fulltime business of
your own PLUS complete
details on our 10-Day
NO RISK Trial Offer!



Send for your
copy today!

BELSAW INSTITUTE, 106F FIELD BUILDING
KANSAS CITY, MISSOURI 64111

☐ YES, please send me the FREE booklet that
gives full details about starting my own business in
Locksmithing. I understand there is no obligation
and that no salesman will call.

Name _____

Address _____

City _____

State _____

Zip _____



...YOU Can Do It Too!



Build strong hands as you fight strong odors.

Propellant makes up a large part of aerosol anti-perspirants. With Mennen non-aerosol anti-perspirant, you're the propellant. So you get only what you pay for—anti-perspirant spray.

Squeeze on Mennen Anti-perspirant Spray.



ALL ABOUT BATTERIES (Continued from page 82)

retailers. For example, J.C. Penney's lifetime battery, which also happens to be maintenance-free, sells for \$45 outright (no exchange). This is less than the price of "48s" from many other stores.

■ And you get a replacement battery if the lifetime battery fails while you still own the car.

Before leaving the topic of warranties, take a look at a few unusual clauses. Mobil's batteries guarantee free replacement for the first eight to 12 months, depending on total warranty. After that, the warranty suddenly drops to 50 percent and 25 percent credit in specific 9 to 60-month increments. K-Mart, on the other hand, gives 12 to 18-month free exchanges before prorating its 36 and 48-month batteries. And Firestone adds one full year to the warranties of its 24, 36, and 48-month batteries on the West Coast.

Be sure to read all warranties, because some do have rather unusual clauses.

Maintenance-free batteries

One of the newer wrinkles in car batteries are those that never need attention. So-called maintenance-free

(MF) batteries have no filler caps and never need water or servicing.

What, you ask, is the catch? Do they work and, if so, how do they work?

The traditional car battery uses plate grids made of an alloy of lead and antimony. The antimony stiffens the soft lead. Antimony is fairly expensive, and about 30 percent of it comes from China, even today. Another 30 percent comes from South Africa and Bolivia.

MF batteries substitute calcium for the antimony, sometimes with a trace of tin. Lead-calcium grids cost less than lead-antimony, but lead-calcium is also harder to cast and less consistent in structure.

At least one of the big battery manufacturers—Delco—has developed a system of rolling and stamping lead-calcium grids instead of casting them. Slots are cut into the lead-calcium sheets, and they're then stretched so they resemble the perforated steps on metal fire escapes. Gould, Globe-Union, Prestolite, Electric Storage Battery, and General Battery Corp. also make MF batteries, but these have grids cast by conventional methods instead of roll-

ing, stamping and extending the grid metal as Delco does it.

Unlike batteries with lead-antimony grids, those with lead-calcium normally don't "gas"—the discharge of hydrogen and oxygen. When you charge a standard lead-antimony battery, and especially when you *overcharge* it, each cell gives off hydrogen and oxygen which explodes when sparked or exposed to a flame. Escaping gas in a conventional battery also takes some of the electrolyte with it, which is why you have to refill each cell periodically. A constantly thirsty battery means its being overcharged—and that's a dangerous and harmful (to the battery) situation.

MF batteries, though, don't give off gas unless they're grossly overcharged. Thus they don't use up water and never need refilling. Some don't even use an aqueous electrolyte. Rather, a few MF batteries use a gel as their electrolyte—a substance with the consistency of aspic or cold consommé. There are no filler caps, but MF batteries do have tiny vent holes in each end to help equalize atmospheric and internal pressures.

If MF batteries are overcharged, though—and it can happen through a defective voltage regulator—gassing *can* occur, and you have a potentially dangerous situation. It's very important with an MF battery to have your charging system checked periodically. If you notice high charging on your dashboard ammeter (assuming you have one), have the system looked at immediately.

Detroit's automakers like MF batteries for one reason in particular. They can place them anywhere in a new car. Smog restrictions make underhood temperatures so high nowadays that heat becomes one of the battery's major enemies. But with no need to service an MF battery and no gassing, carmakers can hide it anywhere—inside a console, under a seat and so forth.

General Motors made MF batteries standard equipment in some Pontiacs in 1970, and today they're used in all new Cadillacs, Chevettes and Vegas. Many aftermarket retailers (chain stores, filling stations, and auto dealers) sell MF batteries as replacements for original equipment. These are usually no more expensive than comparable conventional batteries, and hold a charge for long periods. Most battery engineers see MF units as the wave of the future.

Dry-charged batteries

Today, approximately half of all replacement car batteries are sold *dry-charged*. Dry-charged means you have to add electrolyte before you

Six ways to make your battery live longer

Lengthen the life of your car battery by following these simple tips:

1. Have your car's charging system checked periodically. Too-high and too-low charging rates are primary causes of battery failure. A mechanic should test your alternator and voltage regulator at every tune-up, also when you buy that replacement battery (very important). Most shops and retailers conduct such tests free.

2. Be sure your battery is securely bolted down. Vibration is a major cause of plates rubbing through separators. Once two plates touch, it's all over for the battery.

3. Check your battery's water level regularly. Always use distilled rather than tap water. Tap water in many areas contains harmful minerals. Never use softened water.

4. Keep your battery clean and dry. Wash dirt from the top of the battery. Use baking soda to get rid of whitish deposits on connections and hold-downs. Slather axle grease over connections to make an airtight seal, then cover the grease with plastic wrap. Corrosion-inhibiting felt pads under terminals also help.

5. Don't let the battery run down accidentally. Big drops in charge (such as headlights left on overnight) are hard on a battery, can cause plates to buckle and rub through separators.

6. Never add acid or any additive (except distilled water) to a battery. So-called "rejuvenators" and "life extenders" can be harmful to cells and usually void a battery's warranty.

can use the battery. The electrolyte (25 percent sulfuric acid and 75 percent pure water) usually comes in a separate plastic container. Either you or the mechanic pours this electrolyte into the battery before you install it in your car.

Except for a few which are vacuum sealed or come with premoistened plates, dry-charged batteries should be slow-charged before use. Most, though, aren't. The mechanic puts in the electrolyte, installs the battery, and if there's enough energy to start



Naming it was easy.

Mennen Sof' Stroke® Shave Cream has Lanomer® (a lanolin derivative). It lubricates your skin, so your razor shaves your whiskers without irritation.

Sof'Stroke.®



your car, that's it. If your engine doesn't start immediately, he hooks up a fast charger and gives the battery a quick boost. This isn't too healthy for the new battery.

The proper way to activate a conventional dry-charged battery is this. Fill it with electrolyte. Let it stand for 12 to 24 hours. Charge it on a slow charger. Then install and use it. The battery will last a lot longer that way.

Major battery makers

Seven major manufacturers produce 90 percent of the car batteries on today's market. These Big Seven, as they're called, are: Delco, Gould, Electric Storage Battery, Globe-Union, Prestolite, General Battery Corp. and Chloride, Inc.

These big companies supply private-label brands to many different accounts. Atlas brand batteries as sold by Exxon, for example, are made by both Prestolite and General. Sears gets most of its batteries from Globe-Union. J.C. Penney buys from Gould.

Delco is owned by General Motors and makes original-equipment (o.e.) batteries for all GM's new cars and trucks. Delco sells aftermarket batteries only under its own name, but it does this through new-car dealers,

some auto-parts stores and some filling stations.

Gould supplies private-label-brand batteries not only to Penney but also to Montgomery-Ward, Gemco, K-Mart, Union 76 and Motorcraft. Ford buys some 46 percent of its Motorcraft o.e. batteries from Gould.

Globe-Union, in addition to its Sears account, also makes batteries for Ford—plus AMC, Caterpillar, Gulf Oil, Sunoco and NAPA.

General Battery Corp. makes private labels for Pep Boys, Atlas, Grand Auto, Checker Stores, Schucks and others. Electric Storage Battery supplies Chrysler Corp., and markets its own units under the Exide and Willard names. Prestolite and Chloride were reluctant to give names of their private-label customers, so I can't include them here.

The important thing to remember, though, when the time comes to buy a new battery for your car: Ask about cranking amps, first. If the salesman doesn't have the figures handy, have him look them up in his sales and data literature. Then once you've established the battery that'll match your cold-cranking and reserve needs, the rest—warranty and price—will pretty much take care of themselves. ★★

The finishing touch...

Begin by sanding smooth with successively finer grades of sandpaper...

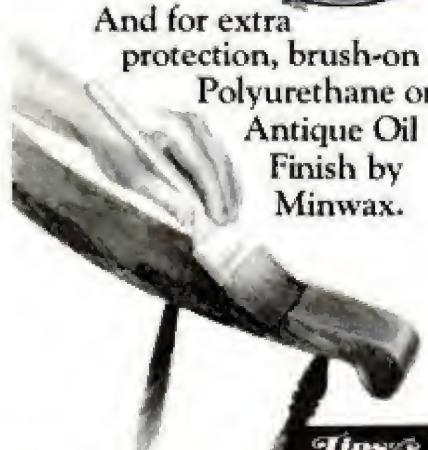


Then finish with the best... Wood Finish by Minwax...

to bring out the beauty in wood...



And for extra protection, brush-on Polyurethane or Antique Oil Finish by Minwax.



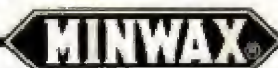
Our free 16-page booklet shows how easy it is.



MINWAX CO., INC. dept. PM-26
72 Oak Street, Clifton, N.J. 07014

Send FREE booklet, "Tips on Wood Finishing." Also, color card and name of my nearest dealer.

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____



BACK-YARD FISH FARMING

(Continued from page 83)

series of three tanks or pools, each stepped slightly lower than the preceding one and covered with a sloping glass roof to let in sunlight. The upper pool is a purification filter to detoxify waste materials from the fish in the bottom pool. Here water passes through a bed of clam and oyster shells where bacteria change fish excrement into useful compounds like nitrates and nitrites, which serve as nutrients for algae. After further filtering through rich soil and oxygenating plants, the water flows down by gravity into the second or middle pool. Here algae and tiny freshwater animals like daphnia are cultured. The daphnia feed on the algae and, in turn, become food for the fish.

Periodically, this food-rich water is flushed down into the bottom pool where the fish are bred. Some species grow to almost a pound within about 12 weeks. As the fish mature, they're removed from the pool by nets, cleaned, then frozen for future use. As the water in the lower pool gets dirty, it is fed by a windmill-powered pump back up to the purification pool, and the whole process starts over again in a continuous cycle. The water also passes through a solar collector and is heated. The structure surrounding the bottom pool doubles as a greenhouse for growing plants and vegetables—no opportunity is overlooked in this clever high-yield food system.

Build-it-yourself Ark

"Anybody can build an Ark," says marine biologist John Todd, one of the institute's founders. For people living in warm climates, Todd suggests a simplified two-pool system that eliminates the need for a water heater and windmill pump. The tanks can be small plastic swimming pools of the above-ground type. Algae and daphnia are grown in the upper pool, feeding on a few ounces of roasted soybeans added every few days. Fish live in the lower pool. Periodically, dirty water is manually drained from the lower pool and fresh water added to the upper pool, thus also eliminating the need for a purification filter.

Extensive information on fish-culture systems and how they work can be found in the 132-page *Journal of the New Alchemists* for 1974, available for \$6 postpaid from the New Alchemy Institute, Box 492, Woods Hole, Mass. 02543. Growing your own fish—like home vegetable gardening—can not only save money in these days of high food prices; it can also be a lot of fun. ★ ★ ★

"Let me show you how easy you can have a money-making business—part time or full time"

—Francis von Schrader, President



CARPET DETERGER



UPHOLSTERY DETERGER



WALL DETERGER

This is no ordinary business opportunity. It offers you an income you may have thought impossible—a business that keeps growing. With Von Schrader Detergers you provide a service everybody needs—on-location cleaning of carpeting or upholstery or walls. Every home and building are potential customers. The equipment you use is the finest: (1) Von Schrader Carpet Deterger gives deep-level cleaning to carpeting; (2) Von Schrader Upholstery Deterger cleans fabrics and synthetics beautifully; (3) Von Schrader Wall Deterger cleans walls five times faster than by hand. Start with just one Deterger, if you wish. Then, as your business grows, you may want to add the other two and thus offer a complete cleaning service. You own your equipment—no fees, royalties, contracts. Work full time or part time. Your investment? It's so small you'll find it hard to believe. What's more, we help you every step of the way, just as we've helped thousands of other Von Schrader Associates to financial independence.



Free Booklet gives you full information

Get the facts about your future in on-location cleaning. See how well Von Schrader Detergers are built, how easy they operate. Extra! Special Recorded Message from Francis von Schrader to you included.

VON SCHRADER company

1026 Place, Racine, Wisconsin 53403

Please send complete information on Von Schrader Detergers.

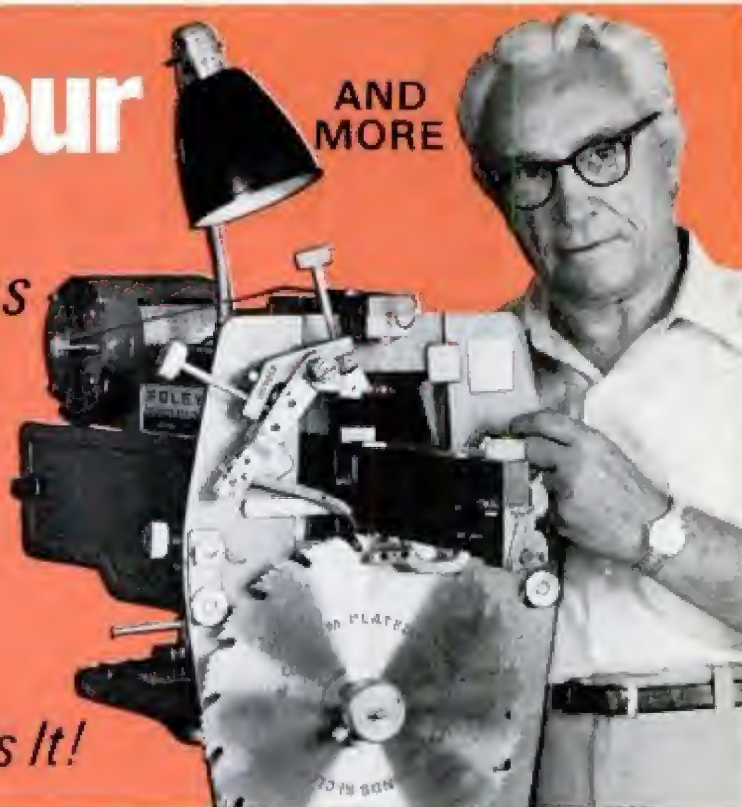
Name _____
Address _____
City _____
State _____ Zip _____

Earn \$8 an Hour

*In The Evening or on
Weekends in a Business
of your own!*

Sharpening Saws & Tools

*For Industry and Homes!
Every Neighborhood Needs It!*



No Experience needed.

Here's a business of your own that lets you start earning *right now*. You need no experience or training. Your precision-made Foley equipment does the job for you. Simple, easy-to-understand instructions tell you how.



Sharpening is Big Business ... and Profitable Too!

All over the country, in small towns and big cities, people just like yourself are earning big money in the saw sharpening business. Industry, home handymen, professional carpenters all need their equipment sharpened. It's a business that's growing every day.

Sharpen Carbide and High Speed Tools



The tremendous growth of the use of Carbide Tipped Saw Blades and other extra hard metal tools is an *extra bonus* for saw sharpening shops using Foley's Carbide Grinding Equipment. It takes just 15 minutes to renovate a carbide blade... 15 minutes that pays you \$8—practically all profit, too! Customers are limitless because Carbide tipped saws are being used almost exclusively to cut metals, plastics, laminated woods, hard woods and giant logs.

Part Time Shop Now Makes \$30,000 A Year in Profits

Floyd B. of New York started his saw sharpening business in his spare time. But before long, his business made it necessary to quit his regular job and devote full time to his new business of his own. Today he has a fully-equipped saw sharpening shop. In his first year, he did over \$30,000 in business.

Foley will finance you.

There's no need to make a huge investment or carry big inventories when you're in "business for yourself" with Foley Sharpening Equipment. All you need is the equipment and pennies worth of electricity. Foley will finance your equipment to help get you started with minimum investment. When you charge \$8 for sharpening a carbide tipped saw blade, \$7.50 is profit.

No Franchise Fees! No Obligation

Find out today how you can earn big money in the saw sharpening business. Write today for more information. There is no obligation.



Manufacturing Company

3300 N. E. Fifth Street, Minneapolis, Minnesota 55418

Foley Manufacturing Company
216-6 Foley Bldg., Minneapolis, Minn. 55418

Please send information on the potential profits in a Sharpening business of my own and how Foley will help finance me.

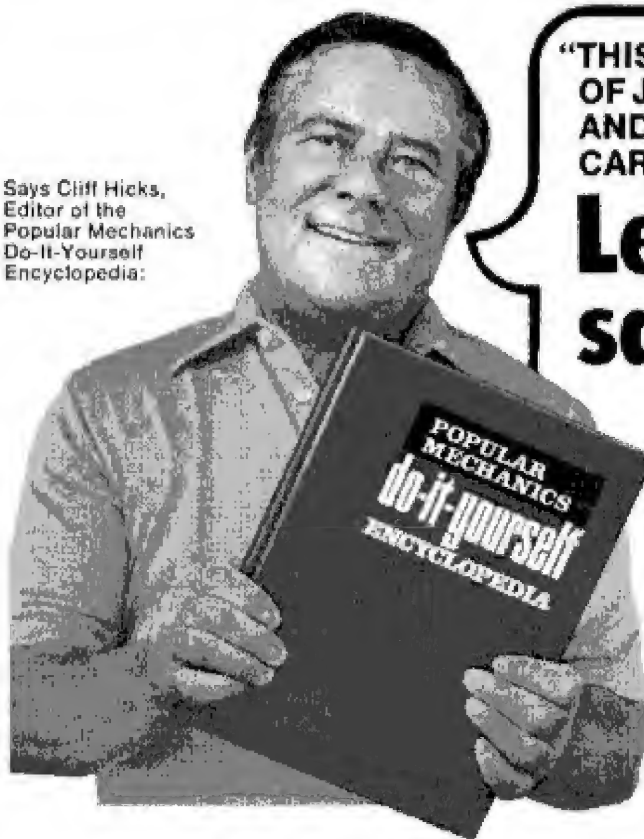
Name _____

Address _____

City _____

State _____ Zip _____

Says Cliff Hicks,
Editor of the
Popular Mechanics
Do-It-Yourself
Encyclopedia:



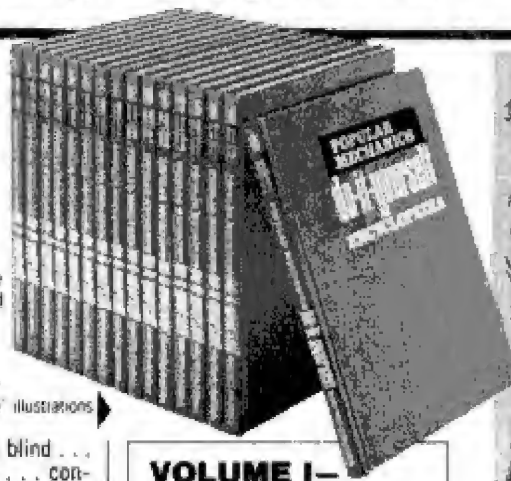
"THIS SET OF BOOKS CAN HELP YOU DO HUNDREDS OF JOBS AND PROJECTS WITH YOUR HANDS — AND SAVE A BUNDLE OF MONEY ON HOME AND CAR REPAIRS AND IMPROVEMENTS.

Let me send you a sample volume FREE

with a cancel-anytime subscription to the set"

- 196 pages
- 8 1/4" x 11"
- Over 600 how-to-do-it illustrations
- Stain-and-scruff resistant washable binding
- Opens flat for workbench use
- Big, easy-to-read type

Sixteen 8 1/4" x 11"
Volumes — 3,136 pages —
Over 10,000 "show-how" illustrations



VOLUME I — A \$4.95 VALUE — YOURS FREE

A few of the subjects
covered by more than 6,000
index entries — projects,
plans and ideas for better living.

APPLIANCES — Money-saving fix-it instructions
ATTICS — Get more use from available space
BASEMENTS — Waterproofing, finishing tips, etc.
BATHROOMS — Remodeling ideas
BEDROOMS — Built-ins, other space-savers
BOATS — Plans for building boat designs
CAR REPAIR — A wealth of "show-how" illustrations
CONCRETE — The ABCs of home concrete
ELECTRIC WIRING — Basics of home wiring
GARAGES — Step-by-step plans for garage with patio
GARDENING — Gardening tips, how to build equipment
HOME MAINTENANCE — Tested how-to features
KITCHENS — Space and time savers
LANDSCAPING — Walls, paths, site planning
LAWNS — Seed, fertilizer, weed and disease control
LUMBER — Basic data every craftsman should have
MOVIES — Add a soundtrack, also, make films
PHOTOGRAPHY — Picture-taking, darkroom techniques
POWER TOOLS — Ways to get more out of your workshop
PLUMBING — Understanding your home system
RECORD CHANGERS — Trouble-shooting
REFINISHING — How to get results you want
ROOFS — Important things you should know
SHELTERS — Protection for boats, mowers, etc.
STAIRS — Secrets of expert stair construction
SWIMMING POOLS — How to build with concrete blocks or fiberglass
TOYS — Powered toys, action toys, dollhouses
USED CARS — How to recondition
WOODWORKING — Use methods the experts use
... AND EVER SO MUCH MORE!



Why this invitation from Cliff Hicks? To introduce you to a remarkable set of books for the home handyman, craftsman, hobbyist and sportsman — the **POPULAR MECHANICS DO-IT-YOURSELF ENCYCLOPEDIA**.

The Do-It-Yourself Encyclopedia is a profusely illustrated, 16-volume reference library chock-full of step-by-step "how to do it" ideas, plans, projects and shopping tips to save you money. And Volume I of the set is yours absolutely free with this offer.

We will send you this Free volume — and future volumes for Free Trial — so you can see for yourself, without risk, just how valuable and useful the Do-It-Yourself Encyclopedia can be.

Your Free Volume I alone gives you a wealth of valuable information to help you repair auto bodies... antique furniture... squeeze a bedroom into a "tight" attic space... buy and troubleshoot home appliances... make musical instruments... make unusual models... fix a leaky basement... and more. And Volume I is just the beginning. You can readily imagine the benefits of having the entire Encyclopedia.

Save hundreds of dollars on repairs and home improvements

Stop throwing away hard-earned cash unnecessarily on electricians, painters, plumbers, who charge \$10... \$12... even \$14 an hour.

You can use this 16-volume Encyclopedia to lay a slate entryway... build a desk... construct a barbecue... make a runabout boat... build a whole new garage — for a fraction of what you'd spend to have others do these jobs for you. And that's only the beginning!

Easy-to-follow instructions bring you a wealth of exciting hobby and craft ideas.

Whether you're handy with tools or not so handy, this set is for you. Step-by-step, clearly illustrated instructions show you how to make furniture, toys, games; solve plumbing problems; do wiring, auto and appliance repair. You'll not only save labor costs — you'll learn how to get good buys in materials and appliances... learn what to look for in buying a house... learn of tests you should make in the store before you buy an air-conditioner... binoculars... a rotary mower... a used camera.

You'll get expert guidance in skills that can help you earn spare-time income... become a

better home gardener... build a duck blind... remodel with drywall... add a patio... construct dormers... much, much more. It's like having hundreds of professional craftsmen at your elbow advising you.

Turn to any of the 16 volumes in this remarkable 3,136-page Encyclopedia, and you'll discover new ways for you and your family to get more fun out of life... to live better for less money... to know the deep sense of accomplishment and self-reliance that come from being able to do it yourselves.

Want to solve common car ailments? Install a burglar alarm? Build a fun kind of boat? Build a band grinder or band sander? You can discover how to do all this — and much more — in your FREE Volume I alone.

Send for your Free first volume now. Thumb through it, try out a plan or project, use it at your workbench. Imagine 16 such magnificent volumes side by side, offering you money-saving tips... labor-saving information... time-saving advice... plus annual supplements that keep your know-how on new tools, materials and home improvement techniques up to date.

Decide — only after you have seen your Free Volume I — whether you wish to continue receiving additional volumes of the set as described on the order form. Each volume is sent on approval — there's no obligation to buy any at all. Keep only those you want to keep — cancel whenever you wish. Whatever you decide, Volume I is yours to keep Free. Don't delay — send for your Free Volume I today.

POPULAR MECHANICS BOOKS, Box 2015, F.D.R. Station, New York, N.Y. 10022

This certificate entitles you to a free gift — Vol. 1 of the 16-vol. Popular Mechanics Do-It-Yourself Encyclopedia, with no obligation to buy anything ever.

As a subscriber in good standing, you'll enjoy free examination of the additional volumes as you receive them. In about 6 weeks we'll send you Vol. 2, and 4 weeks later Vol. 3. After that, at approximately monthly intervals, we'll send you shipments of Vols. 4-6, 7-9, and 10-16. This way you'll be able to complete the set in 6 months. Also, you'll receive annual supplementary volumes as they are published on free 14-day approval with no purchase obligation. You may cancel at any time or return any volume within 14 days for full credit and no more will be sent. Take as many volumes as you like — or none at all. For each volume you keep, you'll be billed just \$4.95 plus postage and handling. But you need never pay for more than 1 volume per month no matter how many you have received.

Name (PLEASE PRINT)

Address

City

State Zip

Signature

This certificate subject to acceptance by the publisher.

N-551

6 MONTHS FROM NOW... You can be the boss of your own locksmith shop!

*We show you how...
furnish professional tools, too*

SEND COUPON FOR FREE DETAILS BY MAIL. NO SALESMAN WILL EVER CALL

Train at home, using the professional tools of the trade, with the original, accredited LOCKSMITHING INSTITUTE. Be ready in as little as 6 months' time to take care of the demand in your community for professional locksmiths...a demand that is growing rapidly with the increased threats of domestic crime.

Earn while learning, too!

In just a few weeks, you have the know-how and the tools to make extra money changing locks, making keys, doing simple installations. And a few of these jobs each week can add up to several hundred dollars...for some students, even more than they've paid for the course.

Learn by doing

Locksmithing Institute's tested and proved method of home study makes it easy for you to learn...easy to do. Each lesson is fully illustrated and diagrammed and, as you follow the instructions, you work with the tools and materials that have been sent to you with the course. These are not just inexpensive gadgets, but real professional equipment...the tools, supplies, cylinders, tweezers, door handles, gauges, pins, springs, picks, extractors, wrenches, locks and keys...even an electric key machine...equipment that you will be using when you go into business with your own lock shop.

Cash in on the growing need for locksmiths

As an ethical school, we cannot guarantee employment or income for our students, but we do promise to help you develop skill in a profession for which there is a real need. The nationwide need for qualified locksmiths puts you in the driver's seat when it comes to a business that can really pay off for you. And, with your Locksmithing Institute Diploma as a skilled Master Locksmith, you'll be all set to go.

Widespread demand

You'll find locksmithing work to do all around you...in homes, offices, stores, factories, apartment buildings, hotels, hospitals, schools, public buildings, laundromats, vending machines...just about any place you look where a lock and key are used. Automobiles, new construction sites, banks, government locations...all need and use locksmithing services, and pay well for your work.

Get the exciting profit facts today all by mail... no salesman will call

Mail the coupon. We'll rush all the facts to you by mail. Then decide if Locksmithing can be your own answer to independence and a more secure future. Do it now—today.



LOCKSMITHING INSTITUTE

Division of Technical Home Study Schools
Dept. 1110-026, Little Falls, N.J. 07424

- Accredited member, National Home Study Council
- Licensed by N.J. State Dept. of Education • State Approved Diploma • Approved for Veterans

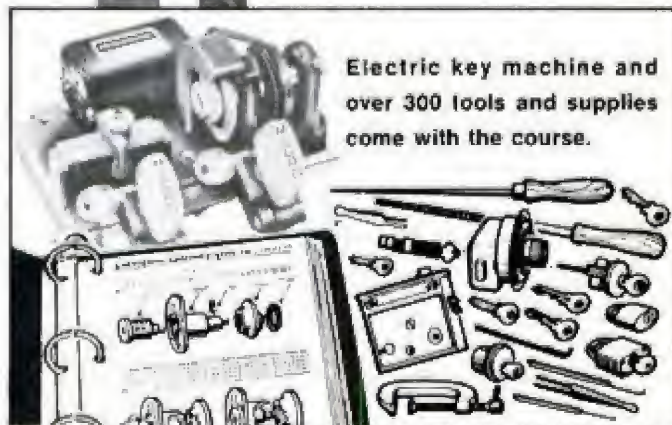


"Highly recommend the course to anyone interested in locksmithing. I've set up a mobile locksmith shop I work out of for spare time earnings. Earned extra money while training."

Jack W. Gray, Mantua, N.J.

"Was able to start my own locksmith service and earned almost \$500 before I'd actually completed the course. Now earn on an average of \$70 a week in my spare time."

Richard Kennedy, Philadelphia, Pa.



Electric key machine and
over 300 tools and supplies
come with the course.

MAIL COUPON NOW

Locksmithing Institute
Div. Technical Home Study Schools
Dept. 1110-026, Little Falls, N.J. 07424

PLEASE RUSH BY MAIL all facts and your FREE booklet, "Your Opportunities in Locksmithing." I am under no obligation, and no salesman will call.

(Print) Name _____

Address _____

City/State/Zip _____

____ Check here if eligible for Veteran's Benefits

SAF-T-TRACK™

RADIAL ARM SAW ACCURACY WITH ANY PORTABLE SAW

Makes your portable saw and router the safest tool in your shop. Unit consists of extra sturdy platform mounted on no-mar plastic feet, precision heavy aluminum and a special carriage which glides on ball bearings, onto which the saw is securely locked.

Crosscuts up to 22" without protractor and up to 20" with protractor, any length. Rips up to 17" without protractor and up to 14½" with protractor, any length. Miters, mortises, grooves, bevels, angles, dados. Fits all circular saws from 4" to 8½" blade size.

Order Router Carriage and Folding legs separately.

Qty.	Saf-T-Track	@ 59.95	
	Router Carriage	@ 6.95	
	Folding Legs	@ 14.95	
	Calif. residents add sales tax		
	Check Enclosed (sorry no C.O.D.'s)		

Western Tool
20150 Platon Drive, Woodland Hills, Ca. 91364

SAF-T-TRACK GUARANTEE
The manufacturer warrants Saf-T-Track unit to be free from manufacturing defects. Unit is covered by a 5 year free replacement guarantee on any parts that fail or wear out due to defective material or workmanship.

If not completely satisfied, return same for refund within 10 days.

Patent No. 3,727,502

Your home workshop can pay off BIG... with this



Power Feed

Planer Molder Saw

Three power tools in one —
a real money-maker for you!

The BELSAW Planer/Molder/Saw is a versatile piece of machinery. It turns out profitable precision molding, trim, flooring, furniture...in all popular patterns. Rips, planes, molds separately...or all at once. Used by individual home craftsman, cabinet and picture framing shops, lumber yards, contractors and carpenters.

Never before has there been a three-way, heavy-duty woodworker that does so many jobs for so little cost. Saws to width, planes to desired thickness, and molds to any choice of patterns. Cuts any molding pattern you desire. Provides trouble-free performance. And is so simple to operate even beginners can use it!

30-Day FREE Trial! SEND FOR
NO OBLIGATION—NO SALESMAN WILL CALL
RUSH COUPON TODAY! BELSAW POWER TOOLS CO.
906F Field Bldg.
Kansas City, Mo. 64111



BELSAW POWER TOOLS

906F Field Bldg., Kansas City, Mo. 64111

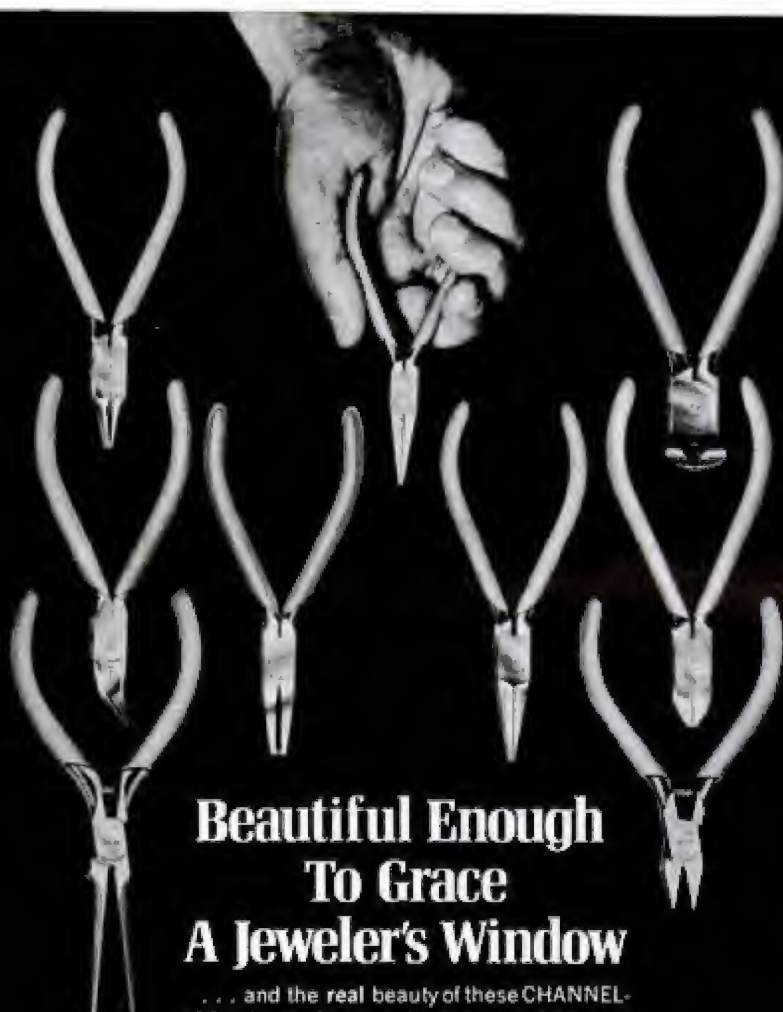
Please send me complete facts about
PLANER—MOLDER—SAW and
details about 30-day trial offer. No
obligation, no salesman will call.

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____



Beautiful Enough To Grace A Jeweler's Window

... and the real beauty of these CHANNEL-LOCK Little Champs is the way they ease hundreds of delicate, fine jobs that need firm treatment. Precision made of highest grade forged steel. High luster polished finish. Perfectly mated, hand honed cutters. Blue dipped plastic comfort grips. Specify CHANNELLOCK Little Champ precision pliers. You'll like 'em. Send for our free Catalog.

CHANNELLOCK, INC., Meadville, Pa. 16335

CHAN NEL LOCK

Little Champ Precision Pliers

There are a lot of fishing clubs around but there's not a single one anywhere that's anything like B.A.S.S. We're not just fishermen. We're bass fishermen — a unique breed.

Eight years ago we created B.A.S.S. just for the bass angler, and we haven't changed one bit. Everything we do, and everything you get as a member, has the same objectives . . . to make sure you get the fullest pleasure out of bass fishing and to improve your bass fishing skills.

"Since joining B.A.S.S. my fishing has improved 500%"

That's just a sample comment of one satisfied B.A.S.S. member, Bill Dance — one of the country's top bass anglers.

We have hundreds of comments like Bill's in our files from other satisfied B.A.S.S. members. Ninety-eight percent (98%) of our members are not tournament fishermen so we must have something else that keeps our members coming back for more B.A.S.S. You see, it's not what we say, it's what we are. You get more out of B.A.S.S. because we put more into it. Our membership rolls are growing and so are our members' benefits. Just look at some of the benefits you receive as a member of B.A.S.S.

B.A.S.S. MEMBER BENEFITS

- **BASSMASTER Magazine** — America's leading magazine devoted totally to bass fishermen and available only to B.A.S.S. members. Published bi-monthly, the magazines are jam packed with bassing information and supplemented yearly with a big BASSMASTER FISHING ANNUAL.
- **Free Renewal Tackle** — renew your membership and receive a free package of the newest lures and tackle on the market.
- **Fishing Information Service** — Planning a trip? You'll get the latest information on "hot" fishing spots, lakes, motels, marinas and guide services.
- **Special Buying Privileges** — Enjoy convenient shopping from your own B.A.S.S. Catalog for top-quality sporting gear.
- **Car and Truck Rental Discounts** — B.A.S.S. members are eligible for a 20% discount on regular car rental rates from Hertz and National Car Rentals, and a 10% discount on Hertz truck rentals.
- **\$500 Boat Theft Reward** — Special sticker protects your boat from theft. If your boat is stolen, B.A.S.S. offers a \$500 reward to anyone providing information leading to the arrest and conviction of the thief.

PLUS . . .

You receive a colorful silk embroidered B.A.S.S. PATCH, MEMBERSHIP CARD, DECAL, and MEMBER HANDBOOK. You'll also have a chance to participate in local Bassmaster Chapters, National B.A.S.S. Functions, and B.A.S.S. Fishing Clinics held in towns across the nation.

Don't delay. Fill in the order blank below. Mail it along with your dues to us and start enjoying your B.A.S.S. benefits now. Membership costs only \$12 a year — just pennies a day!



not every
fisherman
wears
this patch.
can you?

BASS ANGLERS SPORTSMAN SOCIETY

P.O. Box 3044, Montgomery, Alabama 36109

Please enroll me as a member of the Bass Anglers Sportsman Society. I understand my membership benefits including my subscription to BASSMASTER will start immediately. (\$7.00 of your yearly dues are applied to BASSMASTER subscription.) If I am not completely satisfied, I'll return membership packet and you will promptly refund my dues.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Age _____ Age you began bass fishing _____

Weight of your largest bass _____

Signature _____

(If under 18, parent or guardian must sign)

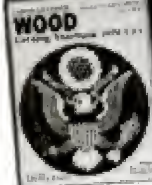
☐ 1 year — \$12

☐ Dues Enclosed

☐ Bill Me

(Add \$2.00 per year for memberships outside Continental U.S.A. and Hawaii.)

17C81



20 WOOD SAMPLES

with woodworkers Catalog

ENJOY woodworking more! Let this new Constantine Catalog-Manual help you build new furniture—refinish, restore beat-up cabinets, chairs, chests, tables faster, easier than ever before!

96 Picture-Packed GIANT PAGES

Find instantly whatever you need. Buy at money-saving prices—cabinet lumber, carving blocks, pipe brier, picture molding, cane, turn, hardware, clock kits, lamp parts, woodwork plans & books, etc. Needed products found nowhere else!

Catalog & Wood Samples Only \$1
Dollar Fully Refunded on First Order

Accept this offer to own fascinating set of 20 2x4 specimens of world's most glamorous veneers—Rosewood, Satinwood, Lacewood, Walnut, Mahogany, Purpleheart, Zebra, etc! Compare! Then identify instantly finest woods wherever you go!

Mail ad with 50¢ for product-packed new money-saver Catalog

CONSTANTINE

2051 Eastchester Rd., Bronx, N.Y. 10461

☐ Enclosed \$1 for Wood Samples & Woodworkers Catalog. (\$1 Refunded)

☐ Catalog Only 50¢

Name _____
Address _____
City _____

SAVE BIG!



Big Job Tractor Kit

Great traction, power. Build your own 18 hp. tractor. Factory direct savings. Field proven. 30 attachments — mower, snowblower, garden tools. 12-pg. Catalog — 50¢; build-it-yourself Plans — \$6.00 (refunded on any purchase).
Struck Corp., Dept. PM26T, Cedarburg, Wis. 53012

"SAVE YOUR HEART"



with a **STAIR-GLIDE®** stairway lift

RENTAL-PURCHASE Program Available

Your STAIR-GLIDE® installs easily and in less than 2 hours. No marring walls or stairway. No special wiring required. Shipped directly from factory within 4 days. STAIR-GLIDE®... the nation's largest selling stairway lift! **UL LISTED!** USED BY THOUSANDS. CARDIAC PATIENTS, ARTHRITIS, SENIOR CITIZENS, RESTRICTED PHYSICAL ACTIVITIES, POST OPERATIVES... and household convenience (outdoor models available). WRITE FOR FREE BROCHURE AND NAME OF DEALER NEAREST YOU.

AMERICAN STAIR-GLIDE® CORP.

4001 East 138th, Dept. POP-26
Grandview, Missouri 64030

STRANGE WARS BY OUR GULLIVER FORCE (Continued from page 86)

waves generated by the worst imaginable storm that could occur in 1000 years.

"Routinely we would set up tests to determine what would happen during the worst storm in 50 or 100 years," says project engineer C.E. Chatham. "But because of the importance of this project it was decided to test for the 1000-year storm."

That would be a double hurricane passing right over the site. A double hurricane occurs when one storm passes and then doubles back to the site while a second hurricane has already established residency.

And what would be the height of the waves? "We figure about 48 feet," says Chatham. "The project is planned in water that's 40 feet deep. This depth can only sustain waves up to 31 feet high. But during this double hurricane, we estimate that the storm might pump an additional 23 feet of water into the area, thus supporting a 48-foot wave."

He'll build the model, set up scale waves and crash them against different breakwater designs built with different breakwater materials such as concrete or rocks. He'll have an answer soon for the people who want to know: "Will it hold during the worst possible storm?" And he'll have an answer too for the cost people who want to know how wide, how high and how much.

He's done this before—building models and testing designs to lessen the effects of wave action on sandy beaches, at harbor entrances and on the harbors themselves.

Who pays?

"When you spend \$200,000 to work up models that might show you a way to save \$2 million in real project construction costs—that's worth it," Chatham says, referring to a simple design change in a proposed Saudi Arabian harbor that saved millions in building costs.

That's what the Corps' experimental station is all about.

"We are self-supporting," says Col. Harry Hilt, WES's commander. "We bill the various agencies that ask us to study projects and give them results and environmental impact statements." WES does this work for the Corps and the rest of the military, and for state, local and other government agencies, as well as private and foreign groups. It's all done on a fee basis.

Models are built and tested with the results determined by expert engineers. Some people believe that these are unfeeling engineers—engi-

neers who have only an interest in numbers and structural stresses and strains with little sensitivity to the stresses on people and the impact of their work on the environment.

Understanding is growing

"In the past, we battled all the time," says Frank Kelly, a Corps public information officer who works directly with conservation groups.

"But now there is some understanding. We are expert engineers and we know our field. But we need to work with the conservationists who are expert in their field," Kelly says.

And getting more sensitive to public pressure is certainly one of the overriding concerns of the engineers at WES. During a recent visit to the Vicksburg facility, I noticed two things—one of them was a great enthusiasm by each engineer for his project; the other was a concern for the project's impact on the environment.

To get its feet wet in the conservation field, the Corps at WES has opened a new department—Environmental Effects Laboratories. It is here that two fascinating projects are underway. The first is modeling the complete ecosystem of DeGray Lake, Ark. A new building is used to house massive tanks that represent the DeGray Reservoir. A greenhouse is attached too in which flora grows in soil taken from the reservoir's watershed.

What they want to do is drop rain on this garden and then see how the runoff affects water quality in the lake. "We are really pushing the state of the art on this one," says Dr. John Keeley who hopes that by changing the composition of watershed runoff he can influence the lake. He believes the working model will show him how.

But raining on a watershed model is not the main project at EEL. The second project is bigger. Actually it's the project with the largest funding—\$30 million. In the real world, the Corps of Engineers handles some of the largest and continuous dredging operations in the world. It is constantly clearing channels in the navigable waters of the United States. With just-granted Congressional power, the Corps will be extending its responsibilities to protecting water quality in these navigable waters plus looking after water quality in adjacent wetland, in lakes larger than five acres and in streams up to the headwaters.

This means the Corps is charged

(Please turn to page 156)

MOTOR's easy "2-step" repair method helps you FIX ALMOST ANY PART OF ALMOST ANY CAR...FAST

So clear, you'll breeze through tune-ups, engine overhauls, air conditioning, brake jobs—practically any repair on cars listed.

You just can't make mistakes with the "2-step" method in the new 1976 MOTOR AUTO REPAIR MANUAL. First the special "Trouble Shooter" section helps pinpoint in a flash the cause of trouble. Next, over 3,000 "How-To-Fix-It" close-up pictures (and plain-talk directions) show how to lick repair problems—fast and right! Even green beginner mechanics find the MANUAL so clear and easy to follow, they speed through jobs almost as fast as experienced pros!

Auto Repairman's "Bible"

Every job, from installing distributor points to front end jobs, is covered in minute detail for 2,300 U.S. car models, 1969-1976. MANUAL contains 55,000 specifications, thousands of illustrations, diagrams and charts—the "meat" of 300 official shop manuals in 1,520 oversize pages.

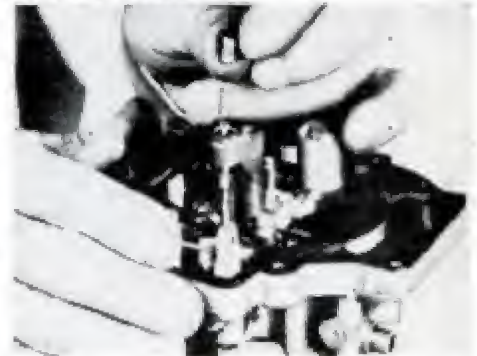
You get service data on Transmissions, Steering, Brakes, Universals, Alternators, Fuel Pumps, Ignition Systems, much more! It's no wonder this illustrated MOTOR MANUAL is called the auto repairman's indispensable "Bible." It's no wonder that 7,500,000 copies have been purchased by repairmen, service station operators, the U.S. Armed Forces, schools and students all over the world. Here is the help every beginner or "pro" needs to fix almost any part of any car right the very first time. And save time, work, money!

Learn all about the 1976 cars and in addition see if Detroit's new specs and procedures affect your older car. Auto makers continually update and improve past model adjustment specs on older cars as new road test data comes in. That's why you'll need this new 1976 MOTOR MANUAL to get the best performance out of your car—even if you already own an earlier edition.

1. Spot trouble fast



2. Fix it fast



1976 edition covers all these makes

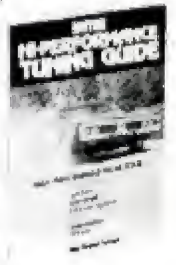
Toronado	Ford Fairlane	Lemans
Mustang	Tempest	Barracuda
Mustang II	Corvette	Buick Apollo
Mark III	Valiant	Olds Omega
Pontiac	Mercury Cougar	Chevy Monza
Thunderbird	Camaro	Buick Skyhawk
Buick	Front-drive	Olds Starfire
Imperial	Cadillac	Ford Elite
Cadillac	Javelin	Mercury
Lincoln	Montego	Monarch
Dart	Torino	Pontiac Astre
Continental	Mark IV	Ford Granada
Mercury	AMX	Cadillac Seville
Ford	Hornet	AMC Pacer
Chevelli	Challenger	Dodge Aspen
Chevrolet	Pinto	Mercury Bobcat
Chrysler	Maverick	Plymouth
Plymouth	Vega	Volare
Dodge	Nova	Cosworth Vega
Oldsmobile	Gremlin	Cordoba
Buick Special	Buick Century	Charger
Comet	Cutlass	Grand Am
Ventura	Monte Carlo	Firebird
Oldsmobile F-85	Matador	Chevette
Falcon	Skylark	Pont. Sunbird

Includes important specifications for major makes of imported cars.

FREE WITH YOUR ORDER

MOTOR's Hi-Performance Tuning Guide, a \$2.95 value.

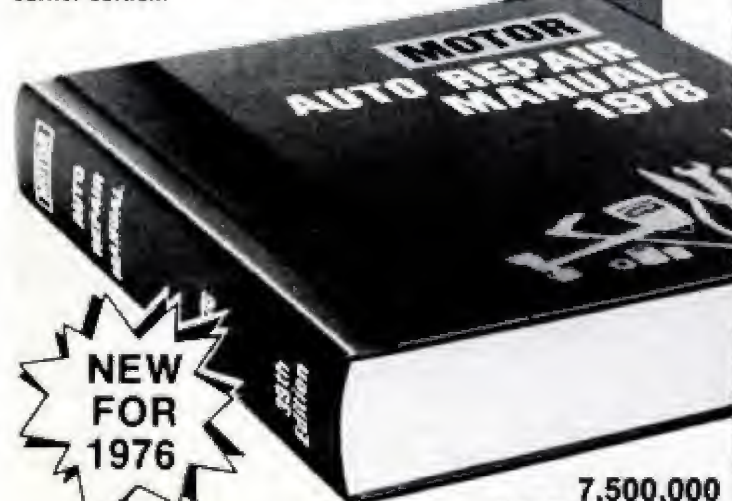
This 64-page Guide tells you all you need to know about getting the most performance out of any car. Covers carburetion, ignition systems, compression ratios, camshafts, exhaust systems, gear ratios, suspension systems and much more. Yours to keep free even if you're not completely satisfied with the Motor Manuals—it's our way of saying "thanks."



Send no money

The MANUAL costs \$13.95, but we'll send it to you for 10 days FREE trial, so you can see for yourself how it makes auto repairs go quick and easy. Use it for 10 days. If it doesn't give you complete satisfaction, return it and owe nothing. Mail the coupon today.

**Order the New 1976 Edition now
and try it FREE for 10 days**



**7,500,000
COPIES SOLD**

Mail to: MOTOR Books, Shipping Service
P.O. Box 2316, F.D.R. Sta., New York, N.Y. 10022

N705

Please send the Manuals checked below for ten days free examination:

- ☐ MOTOR Auto Repair Manual, \$13.95
☐ MOTOR's Auto Engines & Electrical Systems, \$13.95

If I am not 100% satisfied, I will return the Manual(s) and owe nothing. Or I will keep the Manual(s) and pay the total price in three monthly installments, plus handling charge. I may keep the Tuning Guide free whatever I decide.

☐ NOTE: The MOTOR Auto Repair Manual is also available in a Deluxe edition with heavy duty fine grain bindings, thumb indexing and gilt edging. Check here if you'd prefer this version at \$18.95.

I want to save shipping charges.

☐ I am enclosing payment for \$_____ in full. MOTOR will absorb handling charges. (Same return privileges, refund guaranteed.)

Print Name _____

Address _____

City _____ State _____ Zip _____

Signature _____ Tel. No. _____

All orders subject to acceptance by the publisher. Offer available only in the Continental United States. Allow 3-4 weeks for delivery.

BEAT the HIGH COST of LIVING!

HERE IS A BEAUTIFUL WAY TO SAVE MONEY!



Coupon brings
CAREER BOOK,
OPPORTUNITY
REPORT—
FREE!

LEARN UPHOLSTERY AT HOME...restore old chairs, sofas to like-new condition! A clean, enjoyable way to put spare hours to profitable use. Old cast-offs picked up for dollars, worth hundreds when reupholstered. Fascinating home study course includes tools, kits, supplies. Earn as you learn—start your own business!

SEND FOR OUR FREE BOOK TODAY! YOU'LL GET A BIG ILLUSTRATED 32 PAGE BOOK ON UPHOLSTERY and the upholstery business and a sample lesson showing how the fabulously successful MUI system is taught. It costs you nothing to get the information and there's no obligation. No salesman will call.

NOW! MAIL THIS COUPON TODAY!

Modern Upholstery Institute, Dept. BBPM,
Box 16, 1205 W. Barkley, Orange, Calif. 92666.

Modern Upholstery Institute,
Dept. BBPM, Box 16,
1205 W. Barkley, Orange, CA 92666

Please mail me a copy of your book, "PROFESSIONAL UPHOLSTERY for Fun and Profit." I understand no one will call and there is no obligation.

Name _____ Age _____

Address _____

City _____ State _____ Zip _____

APPROVED FOR VETERANS & NON VETS.



SEND FOR FREE BOOK



Early Super Football

GIANT MUM

Grow your own incurved giant mums 5 in. across just like the ones sold at football games. Write today for our Free 127th Anniversary catalog. 72 pages of fruit, house plants, vegetable seed, roses, etc.

Send for FREE CATALOG

SPRING HILL NURSERIES
730 Elm St., Tipp City, Ohio 45366

Create a Family Treasure

Build one of our exquisite grandfather clocks. Create a real conversation piece and family heirloom. Kits are Red-i-Kut, easy-to-build, semi-assembled of solid 3/4 in. kiln dried mahogany, cherry or walnut. Tubular bell or Westminster rod chimes. Spun brass Goddess Diana Lyre or Lady Florentine pendulums. Send \$2.50 for set of three plans, **AMERICAN CLASSIC, SPIRIT OF MOUNT VERNON** and **SPIRIT OF THE CENTURY** plus full color descriptive literature, and specifications on all kits and movements.

KUEMPEL CHIME CLOCK WORKS & STUDIO, 21195



STRANGE WARS BY OUR GULLIVER FORCE (Continued from page 154)

with protecting the water from discharge of harmful dredge, fill or other materials. Now, not only must the Corps watch over the discharge of others through a permit-issuing system, but it must adhere to the old phrase, "Physician heal thyself"—it must mind what it does with its own tailings.

So the Corps' labs at WES have mounted this \$30 million effort to find out what can be done with materials from dredging operations.

Heaping up sludge and making barren, ugly islands along dredge channels used to be the common practice.

"Now we have classified dredge materials as a natural resource," says Keeley. "We are studying what can be done with this material to develop new marsh lands."

So the Corps is now in the marsh-building business. But before you can build one, you have to know what will grow in it to support wildlife. So there's another experiment at WES that's taking place in another greenhouse. A dozen timers are lined up in a row controlling simulated tidal effects in a dozen giant growing bins. Here different marsh grasses are tested in different quality dredge materials—sand or clay, polluted or nonpolluted. The grasses are also tested for heavy-metal content to be sure a good growing grass in one marsh won't be a toxic grass for local ducks that feed in the new marsh.

Attacking the dredge material problem is the job of EEL, but attacking weeds that are choking our southern lakes is the job of Lewis Decell who heads the Aquatic Plant research project.

"You know weeds are just plants that grow where you don't want them," says Decell. "Now our job is to get weeds viewed as just plants again." But one of the biggest weed problems is occurring in the lakes and rivers of the nation's southeast quadrant. Water hyacinths and hydrilla plague boatmen, fishermen and naturalists in these regions. Waterways are being strangled to death by these weeds, which are not native to this land.

The water hyacinth and hydrilla are glaring examples of foreign vegetations that have gotten loose in an extremely hospitable environment with no local enemies.

The hyacinth was brought from South America by a man who wanted to beautify his pond at home. That was years ago. Now the South is up to its lakes in hyacinths. The same is true of hydrilla. This plant was im-

ported for beautification of aquariums. Someone dumped his aquarium into a local lake, and bang.

So how do you attack this enemy? One of the first weapons was a biggy—laser beams.

"We tried lasers," said Decell, "but it proved too expensive to generate enough electricity to get enough laser power to do the job." So with that idea abandoned, WES lab engineers thought of other approaches such as mechanical harvesters to cut down the weeds. However, this led to high decay rates in the water which sucked up all the oxygen—results, fish kills. So then they tried finding a commercial use for the weeds. But it cost too much to dry the harvest. Then they thought of chemicals to kill them, but that was immediately rejected. And finally they thought to introduce a vegetarian fish—a fish that eats hydrilla and hyacinths for breakfast, lunch and dinner.

Such a fish was found. Called the white amur that is a native of China. So now the WES lab has thousands of white amur, which have been raised to plant in a test lake. Ah, you say, but what if they don't work or what if they capture the lake with their number, or what if there is something unknown now about letting the amur loose in this country? Decell says he'll test one answer. Make the fish you let loose of one sex. Only put out monosex fish so if the program busts you just wait for the fish to die. So that's what's going to happen to Lake Conway in Florida this year.

The white amur apparently has another asset besides its appetite for hydrilla and other water plants. The fish will grow to 80 pounds in some cases, making it a good candidate for sportfishing. Some experimenters have filleted, broiled and eaten the fish. This unscientific experiment was extremely successful and tasty, according to reports.

Decell is also testing the use of a local beetle that attacks the hyacinth, too.

Concrete mysteries

Both the beetles and the fish can be seen and counted. But in another section of WES seeing and counting things is impossible without special glasses. And in the concrete lab the special glasses are in reality an amazing electronic microscope that can practically look into the future.

Bryant Mather is the master of the concrete section and has been looking into the future for years. One of his division's jobs is to come

up with some concrete solutions to strange mysteries. Ask him sometime about the strange case of the holey concrete. It seems that while building an airfield, the strength of the hardened concrete was only half of that called for by the specs. Close examination revealed that infinitesimal bits of aluminum were the problem. The aluminum was reacting in the cement mixture, creating hydrogen gas. This gas caused the holey concrete.

Tracing back to the sources of all the ingredients in the concrete, investigators found that rock for aggregate was hauled from quarry to job site in huge trucks with aluminum beds. As the trucks bounced over rough roads, and as the rock slid out of the raised beds at destination, the rocks would scrape shavings of aluminum from the beds. Solution—iron-bedded trucks.

While the concrete lab solves construction problems, the real heavies of the Gulliver force are those who blow things up. How explosives react in both military and civilian applications is the job of the Weapons Effect lab. It's here that men devise methods of accomplishing giant tasks. It is here, too, that the effects of nuclear explosions are tested by using simulated, nonnuclear devices.

One of those devices is the world's largest blast load generator. In this contraption the effects of mammoth explosions on underground structures are investigated. The generator can develop dynamic pressures up to 500 psi, with a minimum rise time of 2 milliseconds for about 2 seconds.

Explosive excavation

Though testing underground effects is important, equally important is removing ground. This is the job of the Explosive Excavation Research Laboratory. EERL has developed special techniques for excavating highway and railway cuts, spillways and quarries, and has developed special underwater explosives to dredge small harbors.

When the sea level canal through Central America was discussed several years ago, it was EERL that said it could be done.

How anything can be done is what the Gulliver force is all about: how structures can be protected from earthquakes; how chimney smoke can be cleaned; how a river will react to channeling or damming; how trucks can float across marshes; how giant cargo planes can land on membrane-thin runways; and how the wheel should be designed for a lunar rover. It's all being done in the land of the big and the little. ★ ★ ★

Save assembly costs & get it done right — build it yourself!



Here's what one customer said about the rugged trail fun-machine he made with a Kit by Heald.

"My Heald Super Tryke had 5 times the power, greater top end speed, shorter turning radius, faster start, smoother ride than my friend's (major brand) plus Super Tryke's about \$195 cheaper."

John J. Pyles, Jr., Venice, LA



Special Offer — One free accessory with bike or tryke order.

SST-821
SUPER
TRYKE

VT-812
SUPER
BRONCO

A Kit from Heald will get you a rugged work or play machine for much less. Save assembly costs when you build your machine (in 6-12 hours) with our easy 22"x34" assembly chart.

Choose from 17 bike and 10 tryke models, engines from 5 to 20 H.P. All have Comet torque converters (no shifting); air cushion tires and full suspension (smooth ride); tubular steel frames and engine skid pans (shrug off rough going). Electric start, lights for licensing and many accessories available.

Write today for free brochure:

Heald Inc. Dept. PM-62
P.O. Box 1148, Benton Harbor, MI 49022

LEARN MEAT CUTTING

Train quickly in 4 short weeks at Toledo for a bright future with security in the vital meat business. Big pay, full-time jobs—HAVE A PROFITABLE FUTURE OF YOUR OWN! Time payment plan available. Diploma given. Job help. Thousands of successful graduates. OUR 5th YEAR! Send NOW for a big new illustrated FREE catalog. No obligation. G.I. approved. NATIONAL SCHOOL OF MEAT CUTTING, 36 E. 11th St., Dept. G-11-33, N. Superior, Toledo, Ohio 43604.

Be an Aircraft Mechanic ...in 17 months!

SPARTAN School of Aeronautics Dept. 44014 International Airport, Tulsa, OK 74151

Name _____ Age _____

Address _____

City _____ State _____ Zip _____

☐ Check here if eligible for GI Bill benefits. Approved for VETERANS.

LOW COST HEATER KIT

CONVERTS 55 GALLON DRUM INTO SUPPLIED INTO HIGH CAPACITY WOOD BURNING HEATER. IDEAL IN GARAGE, WORKSHOP, BUNKING CABIN, BASEMENT, ETC. FOR INSURANCE AGAINST THE ENERGY SHORTAGE OR POWER OUTAGE.

MADE OF HEAVY PLATE STEEL. KIT INCLUDES LEGS, STOVE PIPE FLANGE, DOWN ASSEMBLY WITH DRAFT CONTROL, BOLTS, NUTS, EASY BOLT TOGETHER INSTRUCTIONS. TOTAL \$27.95 ADD \$2.50 FOR SHIPPING VIA U.S. MAIL EAST OF MISSISSIPPI RIVER IN 48 HRS. DEALER INQUIRIES WELCOME. **MTZ CORPORATION**

2770 UPRIDGE RD. - COLUMBIA STA., INDIANAPOLIS, IND. 46201



BUILD YOUR OWN CAMPER! **SAVE UP TO 50%**

SEND 25¢ FOR DETAILS

3th Wheel Plans.....	\$12.95
Cover basic frame, electric, plumbing, (general construction)	
Camper Plans.....	5.95
Pickup Cover.....	3.95
Travel Trailer.....	4.95
Economline Type Van.....	4.95
Pass. Bus or Delivery Van.....	4.95

EQUIPMENT CATALOG

VIKING CAMPER SUPPLY INC.
99-87 Glenwood Ave.
Minneapolis, Minn. 55403

Please send _____ for which I enclose \$_____

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

Send \$1.00 postage, handling (Refundable)

Wife Beater!

Your faithful wife-navigator may be right most of the time — an Airguide auto compass is right all of the time. Versatile adhesive mount. Self illuminated. Adjustable compensators. At retail auto stores. Write for Catalog 76A.

Airguide
2210 Wabansie Chicago 60647



Learn CUSTOMIZING at HOME in Your SPARE TIME!

We Teach You Everything
You Need to Know to

**CUSTOMIZE
VANS, CARS,
BUGGIES, CYCLES
— INSIDE & OUT
for Yourself or Others!**

FLAMES
FADING
FOGGING
SCALLOPS
LACE
COBWEBS
MURALS
PIN-STRIPING
PORT HOLES
FUNKY LETTERING
MOON ROOFS
SCOOPS
SIDE-PIPES
SPOILERS
CARPETING
UPHOLSTERY
PANELLING
HIGH-BACKS
BUILT-INS
DRAPES
FLARES
ETC.



How To
CASH IN NOW
Customizing
Van, Truck,
Auto Exteriors
and Interiors!

Send for
FREE BOOK!

For the first time! A Home-Study
Plan that puts it all together!

No special talent needed,

because we teach you the professional
secrets, short-cuts and easy ways to handle
air-brushing, decals, screen-prints, striping,
murals, upholstery, carpeting, metal-
work, woodwork, etc.

NOT A "BOOK"! This is a "do-it-yourself," home
study plan that teaches you step-by-step. You are
guided all the way by our experienced counsellors.

TOOLS & SUPPLIES INCLUDED! Not theory —
but real learning through practice! You get tools
and supplies like air-brush, decals, brushes, and
upholstery tools. Nothing else to buy! Yours
to use in your course — and keep!

**BE THE FIRST TO
GET STARTED...
WRITE TODAY!**

Get Free Color
Brochure filled with
facts how to start
your Customizing
Career. No cost, no
obligation, no sales-
man will call.

Careers Through Home Study

CUSTOMIZING CENTER Dept. PB016
4401 Birch St., Newport Beach, CA 92663
Rush me free information that tells how I can
learn customizing for only a few dollars a month.

Name _____ Age _____
Address _____
City _____
State _____ Zip _____

INVENTORS: ADVERTISE YOUR INVENTIONS WORLDWIDE!

You can give your ideas
maximum exposure through
a worldwide computer
network accessible to
hundreds of thousands of
computer terminals used
by your most important
prospects—including the
world's largest corporations.

• Let us help you use this
efficient new computerized
system.

• Get full facts **MEMBER OF**
free today
on this safe,
new, low-cost
way to sell
your invention
or idea.
Act now!



WORLDTECH

**COMPUTER INFORMATION
SYSTEMS CO., Dept. PM-26**
7300 France Avenue So., Suite 204
Minneapolis, Minnesota 55435

NAME (Please Print) _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

BUILD YOUR OWN TRAVEL TRAILER

Scamp



EASE OF ASSEMBLY



For the first time - a fiberglass Do-It-Yourself Kit! No welding. Scamp kit includes all parts you need and fully illustrated step-by-step assembly manual. Scamp can be completed in 80 hours with minimum tools. Also available ready to hitch-up-and-go. Ideal for hunting - fishing - camping. Sleeps 4. Fully guaranteed. 950 lbs. fully equipped. 85 lbs. tongue weight.

Scamp

Write: SCAMP, DEPT. PM-2, Beckus, Mn. 56435
Rush 12 pg. full color catalog. \$2.00 enclosed.

Name _____
Address _____
City _____ State _____ Zip _____
Home Phone (_____) _____
Business Phone (_____) _____

VARIEZE PLANE

(Continued from page 75)

automatically by a return spring in each tail.

Elevator and aileron control are equally simple and ingenious. These are combined into dual-function "elevons" in the nose-wing canards. For climbing and diving, they operate collectively, moving up or down together. For banking, they work differentially—one up, one down—like conventional ailerons. Both functions are coordinated by a modern military-type side-stick controller.

High maneuverability

Because the canard control surfaces are set far forward, they provide extremely responsive control, improved climb and turn-on-a-pin-head maneuverability—they literally pull the nose in the direction you want to go just as if you put a rudder on the bow of a boat instead of the stern. The canards also add lift at high angles of attack, making the plane virtually stall and spinproof.

The nose wheel retracts, but only partly to lessen drag in flight. Its other advantages are even more clever. Retracting the wheel on the ground allows the plane to "kneel" like a camel, resting on its nose. This makes it easier to climb in and out and compensates for the tail-heavy effect that occurs with no pilot aboard to counterbalance the weight of the rear-mounted engine. Parking the plane on its nose keeps it from tipping over backward.

The main gear is fixed to eliminate the added weight and complexity of a retract-gear system. A single, continuous bow-shaped strut supports both wheels and runs clear through the fuselage to simplify attachment and lessen impact strain on the airframe—another ingenious touch. Individual toe brakes are used for steering and stopping.

Simple construction

Construction is almost entirely of fiberglass-covered foam. This not only accounts for the craft's unusually low weight, but actually speeds building time—there's little welding, machining or metal forming.

Despite its small size, the VariEze can carry more than its own weight, or a gross of 890 pounds. Climb rate with one aboard is a brisk 2000 feet per minute; with two, 1200 fpm. Estimated construction cost is \$1500, plus \$1200 for a converted VW engine. Burt expects to have plans and/or kits available by early summer. An information kit is \$5 from Rutan Aircraft Factory, Box 656, Mojave, Calif. 93501. ★ ★ ★

It's not just a super 8 movie camera.

It's the new FILMOSONIC™ XL super 8 SOUND movie camera from Bell & Howell.

Now is the time to enter the wonderful world of SOUND. With the new Filmosonic home movie camera, you can capture life in perfect super 8 SOUND movies.

Not only does it record synchronized sound on film, it also delivers a combination of features unheard of in any other home movie camera.

Features like automatic viewfinder signals to pretest sound and light levels, so you can shoot with total confidence.

Easy handling is built into the Filmosonic camera's compact design. The rock-steady pistol grip and lighter weight enable even a beginner to shoot top-quality movies.

Of course, you get all the practical advantages of other

Bell & Howell low-light movie cameras. The Focus-Matic® distance measuring system. Thru-the-lens viewing that shows what you'll wind up with on film. And a fast zoom lens that lets you take movies of a wide range of subjects in diverse situations.

If you've waited to buy your first super 8 SOUND movie camera, this is the camera you've been waiting for. Filmosonic XL. Available now at your BHMC dealer.

BHMC

BELL & HOWELL/MAMIYA COMPANY

© 1975 BELL & HOWELL/MAMIYA COMPANY. All rights reserved. Bell & Howell, Filmosonic, and Focus-Matic are trademarks of the Bell & Howell Company.



George Close, Dept. PX-61
Bell & Howell
2201 W. Howard St.
Evanston, Illinois 60202

Please send me free information on the Bell & Howell super 8 SOUND movie camera

NAME _____
STREET _____
CITY _____
STATE _____ ZIP _____



BUILD THESE BEAUTIFUL CLOCKS

BUY AT FACTORY PRICES AND SAVE \$200 OR MORE!

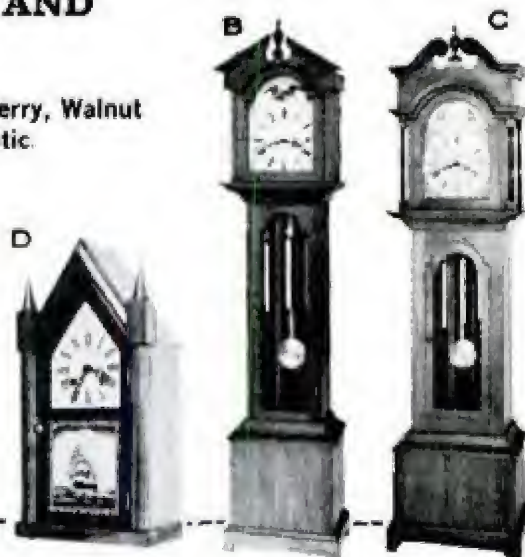
Kits for you to cut and assemble in solid Cherry, Walnut and Honduras Mahogany. No plywood or plastic.

Handsome Moving Moon and "Tempus Fugit" Dials are gracefully styled in solid brass. German-made weight-powered movements play the beautiful Westminster, St. Michael and Whittington Chimes.

Send just \$1.00 for plans and instructions to build your choice of (A) Grandfather, (B) & (C) Grandmother, (D) Steeple plus information-packed catalog of movements, dials, parts and kits to build these and 14 other fine clocks. All 4 plans — \$3.50.

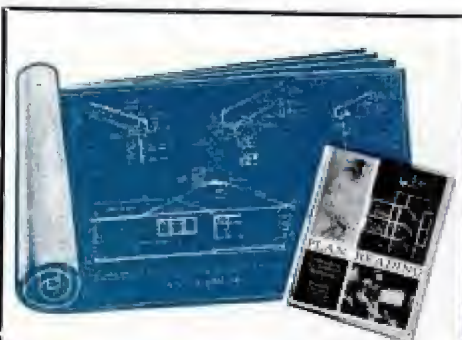
CATALOG ALONE — 25¢
MONEY BACK GUARANTEE
ON ALL ITEMS

MASON & SULLIVAN CO.
OSTERVILLE, CAPE COD, MASS. 02655



MASON & SULLIVAN COMPANY
Dept. PMH, Osterville, Mass. 02655
Please Rush the following plans:
CLOCK A ☐ B ☐ C ☐ D ☐ @ \$1.00 each
Send all 4 plans ☐ @ \$3.50
Send catalog only ☐ @ 25¢

Name _____
Street _____
City _____ State _____ Zip _____



FREE BLUEPRINTS and TRIAL LESSON

—for your greater success in Building

Beginners, craftsmen, even foremen and superintendents, have sent for these free blueprints and trial lesson in Plan Reading as a means of trying out Chicago Tech's home-study Builders training. Learn how you can master Plan Reading—Estimating—and the practical details of all types of construction in your spare time at home. Mail coupon below today—see how you, too can prepare for a better job—higher income, or start your own contracting business.

CHICAGO TECHNICAL COLLEGE/School for Builders
2000 S. Michigan Ave., Chicago, Ill. 60616

CHICAGO TECHNICAL COLLEGE Veterans
Dept. PM-26, 2000 S. Michigan Ave., Check
Chicago, Ill. 60616 Here ☐

Please mail me a Free Trial Lesson, Blueprints and Builders Catalog. I understand there is no obligation—no salesman will call.

NAME _____ AGE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

U.S. Letter Regd. reports "paying" for 28,200 drawings with 12 years. Easy home-study plan guides you. Send for FREE "Surveying Career Kit." APPROVED FOR VETERANS.

SURVEYING PAYS BIG

Name _____ Age _____

Address _____

City _____ State _____ Zip _____

NORTH AMERICAN SCHOOL OF SURVEYING
4500 Campus Dr., Dept. P 0114, University Plaza, Newport Beach, CA 92660

IF YOU CAN SING, WHISTLE, OR HUM A TUNE...

PLAY A SAW!

You can play the Musical Saw. No notes to read, no musical knowledge required. If you are 10 or 70, you play or no play. Musical Saw, soft hummer, bow, reeds and lessons mailed on 3 discs! Trial. Write today for details and free copy of "Pleading News of the World," picturing successful saw musicians. MUSENET & WESTPHAL, 1517 Ford St., Port Arkham, Wisconsin, 53558.

HOME HEATING BILLS EATING YOU ALIVE?

The one sure way to cut your fuel costs is to cut back your thermostat. Fuel Sentry is a device that does this for you... automatically. Everyday, while you are asleep or away, Fuel Sentry will drop the temperature in your home up to 10 degrees, then return it to normal automatically! Fuel Sentry is a simple, effective way to save up to 15% of your fuel costs without sacrificing comfort! No installation! No tools! No re-wiring! Timer controls can be reset or switched off anytime. For any thermostat controlled heating system using any fuel. Order Fuel Sentry now. Send \$29.95 check or M.O. plus \$1.50 shipping and handling to CYTON MARKETING, 208 Centerville Rd., Lancaster, Pa. 17603 Dept. PM-2. If not 100% satisfied, return unit within two weeks for full refund! Major credit card holders can order by toll-free phone. Call (800) 233-0420.

WHEN YOU NEED A BETTER CAMERA (Continued from page 88)

fast speeds only when the light is very bright. More sophisticated cameras let you pick either a shutter speed to match the action or a lens aperture that will force your camera to give you the shutter speed you want.

The less time the light has to reach the film, the more rapidly you should let it in. So a wide aperture (at least $f/2.8$) is advisable for any camera you intend to use for action photography.

■ **Selective focus** is another trick

eras, in addition, tend to be compact, quiet and inexpensive.

■ **Reflex focusing** is closer to what actually takes place on the film: The image will be sharp when and where it looks sharp in the finder, fuzzy when and where it doesn't. Some people find this easier to use and understand than a rangefinder. Others find it harder because it forces them to judge small differences between the sharp and not-quite-sharp. For them, most single-lens reflexes have either a "microprism" spot that



Portrait with normal lens makes nose balloon toward camera, unless you move away till subject no longer fills frame.



Portrait with mild telephoto has subject filling frame, even though shot from far enough away for pleasing perspective.

that better cameras will let you try. A simple camera's $f/8$ or $f/11$ lens keeps everything in focus from about five feet to the far horizon. That's fine when you want both near and far objects in focus; but if you want to throw a background out of focus while keeping the nearby subject sharp, you'll need a camera with a fast lens again. At apertures of $f/2.8$ or faster, only a narrow zone is in sharp focus.

Since focusing gets more critical with faster lenses, better cameras have some means of checking focus accurately. On cameras list-priced from about \$125 or \$150 up, this is usually a rangefinder; on reflex cameras, it's a ground-glass or similar focusing screen.

■ **Rangefinder cameras** show your subject through a window with a fuzzy image in its center. That fuzzy spot is actually two images, slightly out of register; when the two images overlap exactly, the fuzziness will disappear and the lens is in focus.

Rangefinder focusing is easy after a few minutes spent getting the hang of it, and is quick. Rangefinder cam-

slightly exaggerates the difference between clear and slightly fuzzy, a "rangefinder" spot that breaks up out-of-focus lines or both. Twin-lens reflexes, with bigger ground-glass images, tend not to have these extras.

■ **Visualizing your image** is important. If you can't relate what you see in the finder to what you'll see on your print or slide, you can't expect good pictures. For many people, reflex finders look more like a picture, less like a peephole on the world, and make this visualization easier.

This effect is especially true of the big ground-glass screen or a twin-lens reflex. That screen is big because the film is big, and the bigger the negative, the higher the potential print quality. Twin-lens cameras are easily used at waist level or below, which makes them great for child photography from the child's eye-level and viewpoint.

The single-lens reflex or SLR for short, is far more popular, because it can do just about everything, and do some things uniquely well. The key to its versatility is its viewing system, which lets you look through

the camera lens to see just what the film is seeing (when you shoot, the viewfinder mirror flips up to let light through to the film).

That makes the SLR exceptionally good for close-up work, or for use with interchangeable lenses.

No matter how close you get with an SLR, you don't have to worry about cutting off part of your subject because your viewfinder is in one place and your lens in another, as is the case with a twin-lens reflex (see page 78, Nov. '75). And you can see whether focus is correct or not.

For the same reason, no matter how long a telephoto lens or how wide a wide-angle you use, you will see what the lens and film see, and be able to focus without cumbersome auxiliary equipment.

Being able to take off one lens and mount another makes a vast difference in what a camera can do for you. Wide-angle lenses, for example, don't just let you get more in the picture, important as that is when shooting in cramped places; they also let you exaggerate perspective and dramatize space.

Long telephotos, on the other hand, compress space, making cars spread over a mile of freeway look bumper-to-bumper; and long teles give you "close-ups" of subjects too far away to reach (or altogether inaccessible, like the helicopter on page 89).

Medium teles, from 85 to 105-mm, let you shoot portraits from the distance that gives the most flattering perspective, yet still fill the frame with your subject.

So should you buy an SLR? Yes—if you want to use its versatility and are willing to pay the SLR's high cost and the cost of additional lenses or close-up accessories. You might even want one just because you like its viewfinder system better than that of other camera types. On the other hand, realize before deciding that the SLR is noisier, more complex, more expensive, and usually heavier than other types, and the viewfinder blacks out for an instant every time you shoot (it's that flipping mirror).

■ **Buying a new camera won't make you a better photographer if you just stick to your old habits. It won't even make you a more versatile photographer unless you make sure you make use of your new camera's inherent versatility. But if you're trying to take pictures now that your old camera can't handle, a new camera can be the answer if you know what you want.** ★ ★ ★

Learn appliance repair to save money or start a part-time business...



Send now for this free NRI catalog.

Train at home in your spare time with this short, easy course

NRI can prepare you quickly to do professional appliance servicing for extra income, or to save money on your own appliance repairs. You can finish the course in a matter of months, learning by easy step-by-step bites. And you even get your

own professional appliance tester at no extra cost.

Over a million students have enrolled with NRI, and that's your assurance of expert training from the basics right through to on-the-job troubleshooting. Mail the coupon today for your free NRI catalog. No salesman will call.

RUSH FOR FREE CATALOG



NRI SCHOOLS
McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue,
Washington, D.C. 20016

Rush me your illustrated free book that tells about opportunities in servicing Electrical Appliances and gives details of NRI's simplified training plan. I understand there is no obligation, and NO SALESMAN WILL CALL.

600-021

☐ Approved for Career training under G.I. Bill. Check for facts.

Name _____

Age _____

Address _____

City _____

State _____

Zip _____

ACCREDITED MEMBER NATIONAL HOME STUDY COUNCIL



(actual size)

Orders filled promptly
by R.A.M. Enterprises,
17 Oaklane Avenue,
Fairless Hills, Pa. 19030

Pick the lock that can't be picked

New, Magnetic Padlock
provides individual security
never before available in a lock

Snap shut immediately.

No keyhole.

Opens in all kinds of weather.

Won't stick or freeze.

Comes in 3 sizes: \$9.95, \$10.95, \$11.95.

(HASP) (3") (5")

SPECIAL ORDERS FOR KEYALIKES AVAILABLE

CLIP COUPON BELOW (print clearly)

Send to: R.A.M. Enterprises
17 Oaklane Avenue
Fairless Hills, Pa. 19030

Check ☐ Money Order ☐
From: Dept. PM

Name

Address

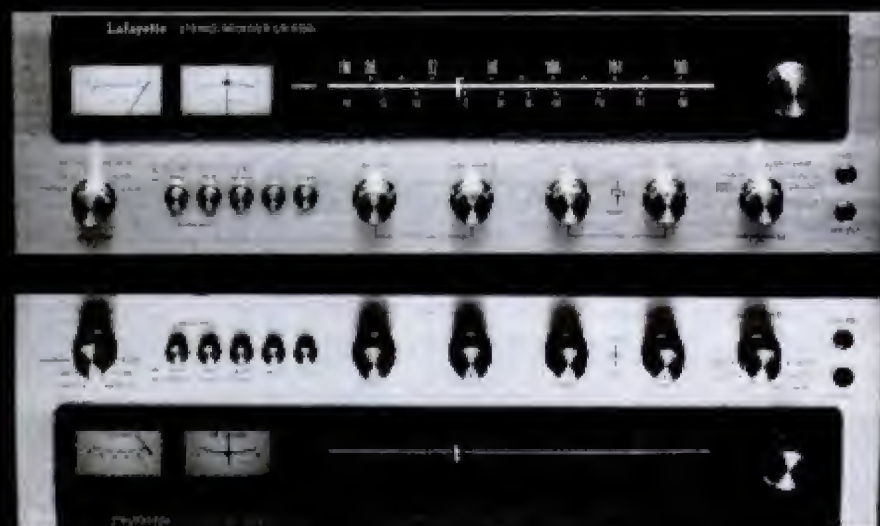
City

State

Zip

Quantity ☐ \$9.95 ☐ \$10.95 ☐ \$11.95

AS SHOWN (3") (5")



The Image of Performance

The new Lafayette LR-2200 has the look of performance many receivers try to achieve. But real performance comes from within. That's where the LR-2200 stands out.

This serious receiver performs to the highest standards with advanced circuitry, a most selective AM-FM stereo FM receiver, full music controls including two tuning meters, dual tape monitoring jacks and derived four channel matrix. The sensitive performance of the LR-2200 comes across powerfully through 27 watts per channel, minimum RMS. Both stereo channels are driven at 8 ohms from 20-20,000 Hz. with no more than 0.5% total harmonic distortion.

The Lafayette audio designers performed in the creation of the LR-2200. Lafayette put the most features, the cleanest specifications, the most power for any receiver Lafayette has ever offered for this price. \$299.95.

Because Lafayette performed in the creation of this receiver it will perform for you. For years.

See it, hear it at a Lafayette store. It gives quite a performance.

Like to see more of the performers? Visit any of the Lafayette stores coast to coast. Or write for our free catalog.

Electronically Speaking
Who Knows Better Than

Lafayette

© 1977 Lafayette Radio Electronics Corporation

HOW-TO BOOK CLUB

with a Trial Membership in the Book Club that guarantees to save you 25% to 75% on a wide selection of how-to-books



MAIL ATTACHED POSTPAID CARD TODAY!

HOW-TO BOOK CLUB P.O. Box 8, Blue Ridge Summit, Pa. 17214

FEBRUARY 1976 163

NOW...A BREAKTHROUGH HAIR THICKENING DISCOVERY FOR...

Super Thick Hair

...in Only 5 Seconds!



HAIRQUICK™...the new, sensational dry hair thickening formula that works in 5 seconds—to make your hair look and feel amazingly thicker and fuller!

SOLVE THESE PROBLEMS...NOW!

- **THINNING** (hard-to-control) HAIR
- **FINE, SPARSE, WISPY** (wind blown) HAIR
- **OILY, STRINGY, LANKY** (hard-to-style) HAIR

THE STORY OF HAIRQUICK

Discovered in 1974...By Accident!
A researcher's "lucky accident" resulted in a fast-acting, dry amino formula that makes human hair look and feel super-thick within seconds after using it. It all began when a staff researcher happened to run his fingers through his hair, unaware they were covered with a new dry Formula he was testing. Amazingly, his hair suddenly felt so thick, he could hardly comb it. Puzzled, he put it directly on his hair. Same result. The formula is called HAIRQUICK and is now sold in Europe and in the United States.

The Science of HAIRQUICK...WHY IT WORKS!

Scientifically, it seems HAIRQUICK's tiny, invisible amino grains have an amazing ability to adhere to human hair, instantly making the hair look and feel super-thick...giving it a fuller, thicker, more luxuriant appearance...much like younger, healthy-looking hair normally looks and feels. The effect is astonishing, lasts for days, and since it works on dry hair within seconds, no hairspray, shampooing, liquids or gels are necessary.

HAIRQUICK is GUARANTEED TO WORK ON ALL HAIR! No matter how...

- **THINNING** ■ **SPARSE**
- **FINE** ■ **STRINGY, OILY**

The NEW "YOU"...a WINNER!

As HAIRQUICK works its "magic" on your hair...feel the surge of cool confidence, the sense of being powerfully "alive" and "action-ready". You know you look great!

Yes...it REALLY works!

"I had to write to tell you how much I like your product. I ordered my first order out of unbelief, but I am very satisfied with it. Now I am placing my second order because I do not want to run out."

C.B.
Water Valley, Ky.

"I belong to a club of 50 members. I had an awful time holding onto my HAIRQUICK. They were absolutely fascinated with it. All the members are going to bomb you with orders, so please send my supply as soon as you can."

F.Z.
Hoffman Estates, Ill.

HAIRQUICK WORKS FAST!

- Expect thrilling results in mere seconds...not days or weeks.
- No false promises or disappointments.
- Fabulous results can last for days.

HAIRQUICK is EASY to USE!

- ★ HAIRQUICK is a dry powder, easily applied in seconds from its slim, handy, pocket-sized compact shaker (travels with you).
- ★ No messy liquids, sticky gels, and NO HAIRSPRAY!

Iron-Clad Money Back GUARANTEE

HAIRQUICK must absolutely delight you the very first time you use it, or return it within 21 days for a full, prompt, unconditional refund of the purchase price!

HAIRQUICK, INC., 505 5th Ave., N.Y. 10017

TO ORDER MAIL COUPON

HAIRQUICK, INC. Dept. PM 276
505 Fifth Ave., New York, N.Y. 10017

Please rush me: ☐ 60 days supply of HAIRQUICK. I enclose \$4.95, (plus 25c handling)
☐ 4 months supply of HAIRQUICK. I enclose \$6.95, (plus 25c handling)

My Name _____ Address _____

City _____ State _____ Zip _____

Sales Tax: NYC residents add 6%; NY State residents add 5%

MAN-SIZE

ECONOMY TRACTOR

for the serious gardener



Big garden to work...big yard to mow. Man-size Economy Tractor does it all with 3-point hitch and 8 garden tools, 48" or 60" mower, 48" bulldozer, 42" snow blower. More work-power and lower fuel cost with 14 hp engine and all-gear drive no fluid power loss. Send for free color catalog.

Name _____
Address _____
City _____
State _____
Zip _____
1005 K-2 Anoka Ave., Waukegan, Wis. 53186

ECONOMY TRACTOR

Save on ACCORDIONS

40 MODELS — FAMOUS MAKES
Buy direct from importer. Big selection famous makes for students, teachers, professionals. Standard or Electronic. Save — eliminate middle man profit! No risk 5 Day Home Trial. Low down payment, Easy terms. We take anything of value in trade. Satisfaction Assured! Mail coupon.

FREE Catalog and Price List
ACCORDION CORP. OF AMERICA — Dept. R-26
5535 Belmont Avenue, Chicago, Illinois 60641
Send FREE CATALOGS and Prices. Also send information on:
☐ Hohner "button" Accordions ☐ Cordovas ☐ Accordion Amps

Name _____
Address _____
City _____ State _____ Zip _____
☐ Check if you have a Trade-In!

How to MAKE MONEY With GUNS!

Trail of Money in Spare Time to be a GUN PRO.
LEARN GUN REPAIR, custom-stocking, ammo-making, ballistics, etc. Send for Career Kit — ALL FREE!
Name _____ Age _____
Address _____
City _____ State _____ Zip _____
North American School of Firearms • Career by Home Study
4500 Campus Dr., Dept. P-018, Newport Beach, CA 92663

"How to Build Your Own Fishing Rod"

Completely illustrated step-by-step instruction booklet on building your own custom rod. Explains parts, tools, techniques, etc. PLUS beautiful 1976 Fenwick catalog. Send today. (Please enclose 25c for handling.)

Send name, address and **25c** to: Fenwick, P.O. Box 729, Dept. PM-02, Westminster, CA 92683

Turn Extra Time Into Extra Income! Earn \$5 TO \$8 an Hour

**Be your own boss
in a money-making
business of your own.**

**No
Experience
Needed**

Sharp-All

lets you

Sharpen Saws

**garden and shop tools
for home and industry**

Start Earning FAST—No Experience Necessary.

With SHARP-ALL it's easy to start your own business. No selling is involved, no inventory. People bring in their work... you take in year round CASH Profits and keep 90¢ out of every dollar you earn. Work sparetime or fulltime right at home in your garage, basement or tool shed. Work the hours you want—**FREE Book** tells how to start your own business even while working at your regular job.

Big PROFITS In Sharpening.

Every home and business has saws and tools that need periodic sharpening. There's plenty of business waiting for the man who can sharpen saws, planer knives, jointer blades, wood chisels, scissors, pinkie shears, snips, lawn-mowers, axes and other garden, shop and home tools. SHARP-ALL does **ALL** these jobs and more... quickly, and at a big profit. You will be sharpening headquarters for carpenters, builders, lumberyards, factories, home workshops and hobbyists... hundreds of jobs right in your own neighborhood.

SEND FOR FREE FACTS TODAY!

You risk nothing by accepting this offer to see how easily you can turn your spare time into Big CASH Profits with your own Complete Sharpening Shop. Send coupon or mail postcard for full details on our exclusive

30-Day FREE Trial Offer!

FREE Booklet gives full details—

Our Free Book tells how to start a profitable, lifetime home sharpening business, how we help you grow, how we'll finance you.

**Send for
your copy
today. No
obligation.**



BELSAW SHARP-ALL Co., 716F Field Bldg., K.C., MO 64111



It's EASY To Get Started — No Franchise Fees!

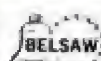
You don't have to invest thousands of dollars to get started in business for yourself. Low Cost SHARP-ALL and our 45 years of experience in helping sincere men earn extra income, *plus the desire to get ahead* is all you need. Fully illustrated Operators Manual gives clear, step-by-step instructions, shows exactly how to sharpen each tool, where to get business, what to charge, how to get free advertising... all the "tricks of the trade". And, SHARP-ALL does the kind of precision job that brings customers back time after time.

Send for FREE Book "Lifetime Security." Do It Today!

**There is NO OBLIGATION and
NO SALESMAN Will Call!**

**ACT NOW!
Coupon
Brings
Full Details!**

No Obligation . . . No Salesman



BELSAW SHARP-ALL CO.
716F Field Bldg.
Kansas City, MO 64111



Please send my **FREE** copy of your book "Lifetime Security" and full details on your 30-Day Free Trial Offer!

Name _____

Address _____

City _____

State _____

Zip _____

**FREE
BOOK**

**RUSH
COUPON
TODAY!**

TRACK POWER OUTWORKS WHEEL- TYPE TRACTORS

New, All-Gear
MAGNATRAC

Popular,
Low-
Cost
Mini-
Dozer

More efficient dozer power and high maneuverability for larger gardens, snow removal, complete landscape projects. Up to 16 hp. Over 30 attachments incl. all garden tools, dozer blade, hydraulic loader. Factory direct savings. Unique, popular, EASILY ASSEMBLED KIT. Odd job and resale opportunities are great. Send now, for—

STRUCK KIT, Dept. PM26, Cedarburg, Wis. 53012

☐ Catalog showing Crawler Tractor Kit construction & uses (specify Magnatrac or Mini-Dozer) — 50¢. Both Catalogs — 75¢.

☐ Plans for fabricating a Crawler Tractor Kit from local materials (specify Magnatrac or Mini-Dozer) — \$6.00. Both Plans — \$9.00 (refunded on any purchase).

NAME _____

ADDRESS _____

CITY, STATE, ZIP _____

LOW-COST CUTOFF SAW YOU CAN MAKE *(Continued from page 109)*

gather your materials first and use the exploded view (page 109) to clarify step-by-step instructions. For detail sizes, see the facing page.

Step 1. Start by drilling and tapping the holes in the 3-in. channel base (see parts list). Do the same with the vertical support arm. Then scribe two lines forming the $\frac{3}{4}$ -in.-wide slot in the vertical support arm. This is the tightener for the V-belt driving the crankshaft arm.

When you mount the support arm to the edge of the channel, tighten the bolts, then check alignment. You may have to shim slightly in order to produce an accurate 90° angle that you can check with a square. Do this carefully since the rolling process of steel is not always accurate and you must have a perfect angle when you tighten bolts.

Step 2. Press-fit the two bronze bushings into the two $\frac{3}{4}$ x $\frac{3}{4}$ x 2 $\frac{1}{4}$ -in. bearing blocks. These standard-length bushings will be somewhat longer and extend beyond the edge of the blocks. Either cut them flush or let them extend toward the inside.

Step 3. Drill and tap the threaded-rod block for the $\frac{5}{8}$ -11 machine screw and insert the rod in the block (this should be done before attaching the block to the base). Place the $\frac{1}{2}$ -in. nut with the counterbore onto the $\frac{5}{8}$ -in. end of the rod. Then clamp it between two pieces of soft wood (to protect the threads) and peen over the edges of the last thread to keep the nut from coming off. Check that the nut will still turn freely and then mount the block.

Step 4. Attach the trip lever to the slide bar with the $\frac{1}{4}$ -20 x 1-in.-long hex-head machine screw but, leave it just loose enough to move into position automatically when the slide bar is raised. This will hold the bar up and out of the way for loading, and a simple flip of the rod on the trip lever will lower it.

Step 5. Insert the $\frac{1}{2}$ x 5 $\frac{1}{8}$ -in. driveshaft into the bearing blocks (you may have to loosen them slightly for proper alignment) and install the 6-in. V-pulley with the hub portion against the block. The 5-in. crankshaft pulley is attached to the vertical support arm using the $\frac{3}{4}$ x 2 $\frac{3}{4}$ -in. bolt, each piece separated by $\frac{3}{8}$ -in. nuts and washers.

Step 6. Assemble the saw head frame by loosely bolting together the two 16-ga. side plates and the two $\frac{1}{2}$ x $\frac{1}{2}$ x 9-in.-square spacing bars using the 10-24 x 1-in. long screws. Then insert the $\frac{1}{2}$ x $\frac{1}{2}$ x 3 in. front and rear spacing bars and place the assembled unit onto the slide bar. Oversize bolt holes pro-

vide space for a good sliding fit between spacers and slide bar.

Step 7. Attach the crankshaft to the 5-in. pulley, leaving enough space so the arm won't bind when in use. Follow the same process with the $\frac{3}{4}$ x 1 $\frac{1}{2}$ -in. bolt, separating the units with $\frac{3}{8}$ -in. nuts and washers. Insert the 20-in. 3L V-belt and attach the crankshaft arm to the saw head assembly using the $\frac{3}{4}$ x 2 $\frac{3}{4}$ -in. bolt (through the spacer bushing) with the same type of $\frac{3}{8}$ -in. nut and washer assembly. At the top rear of the slide bar, insert a $\frac{1}{4}$ -20 x 1 $\frac{1}{2}$ -in. hex-head machine screw to adjust height of the saw head for depth of cut. At the top front of the slide bar, insert the $\frac{1}{4}$ x 3 $\frac{1}{2}$ -in. load weight arm.

Make sure you check the assembly for tight connections and easy movement of the slide bar before trying to operate it. The saw will do a better job if you take care adjusting the depth of cut and vary the load weights to suit the job. You'll need more weight for longer cuts and harder metals to help the blade bite into the work. Finally, wear safety goggles while cutting, and install an off-on switch not easily accessible to children. ★★

BILL OF MATERIALS

Amt.	Size and Description
1	3 x 16 $\frac{1}{2}$ " steel channel (4.1)
1	2 x 6—18" wood base
1	$\frac{3}{4}$ x 4 x 6 $\frac{3}{4}$ " hot or cold-rolled steel
1	3/16 x 3 x 5 $\frac{1}{2}$ " hot or cold-rolled steel
1	$\frac{1}{2}$ x 1 $\frac{1}{4}$ x 20" hot or cold-rolled steel
1	$\frac{1}{4}$ x $\frac{3}{2}$ x 4 $\frac{1}{2}$ " hot or cold-rolled steel
1	$\frac{1}{4}$ x 5" round
3	1 x 2" steel
1	$\frac{5}{8}$ -11 x 8" threaded rod (steel)
1	$\frac{1}{2}$ " heavy nut (steel)
1	$\frac{3}{4}$ x $\frac{3}{4}$ x 8" hot or cold-rolled steel
1	$\frac{1}{4}$ x 3" hex-head bolt (steel)
1	$\frac{1}{2}$ x 6" steel shafting
2	$\frac{1}{2}$ x $\frac{3}{4}$ x 1 $\frac{1}{4}$ " bronze bushing
1	$\frac{3}{8}$ "-dia. x 1" black pipe
1	$\frac{1}{4}$ "-dia. x $\frac{3}{4}$ " black pipe
1	6"-dia., $\frac{1}{2}$ " bore V-pulley for 4L belt
1	1 $\frac{1}{2}$ " motor pulley ($\frac{1}{2}$ " bore) 4L belt
1	2" ($\frac{1}{2}$ " bore) pulley for 3L belt
1	5" ($\frac{1}{2}$ " bore) 'O'-sec. V-pulley 3L belt
1	$\frac{3}{4}$ x $\frac{3}{4}$ x 8 $\frac{1}{2}$ " hot or cold-rolled steel
1	$\frac{3}{4}$ x $\frac{1}{2}$ x 1" bronze bushing
2	5 $\frac{1}{2}$ x 9" 16-ga. steel
1	$\frac{1}{2}$ x $\frac{1}{2}$ x 25" cold-finished steel
1	2 x 2 x 3"-long 3/16" steel angle
1	20" 3L belt
1	30" 4L belt (for motor)
1	1/6-hp motor (No. 48 frame)
1	$\frac{3}{4}$ -16 x 1 $\frac{1}{2}$ " hex-head capscrew
2	$\frac{3}{4}$ -16 x 2 $\frac{3}{4}$ " hex-head capscrews
1	$\frac{3}{4}$ -16 x $\frac{1}{2}$ " hex-head capscrew
1	$\frac{3}{4}$ -16 x $\frac{3}{4}$ " hex-head capscrew
2	$\frac{3}{4}$ -16 x $\frac{3}{4}$ " hex-head capscrews
2	$\frac{1}{4}$ -20 x 1" hex-head capscrews
7	10-24 x 1" pan or RH screws
2	8-32 x 1"
2	8-32 wingnuts
20	$\frac{3}{8}$ " washers
8	$\frac{3}{4}$ -16 hex nuts
8	10-24 hex nuts
6	$\frac{1}{4}$ -20 hex-head capscrews

**Learn at Home...Be a
MOTORCYCLE
MECHANIC...**

Now's the time to "grab a piece of the action" in America's fast-growing motorcycle industry. Big demand for skilled mechanics. Earn steady pay—or start your own business. We show you how! No need to quit school or job. Learn at home in spare time. **RUSH COUPON FOR FREE INFORMATION**

SPECIAL CYCLE
TOOLS & TEST
INSTRUMENTS
INCLUDED...



Careers by Home Study
NORTH AMERICAN SCHOOL OF MOTORCYCLE REPAIR
4500 Campus Dr., Dept. PM26, Newport Beach, CA 92663
Rush me FREE information and full color brochure without obligation.

NAME _____ AGE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Lime Crust, Crud and Clog of HOME HUMIDIFIERS Goes and STAYS GONE Automatically!

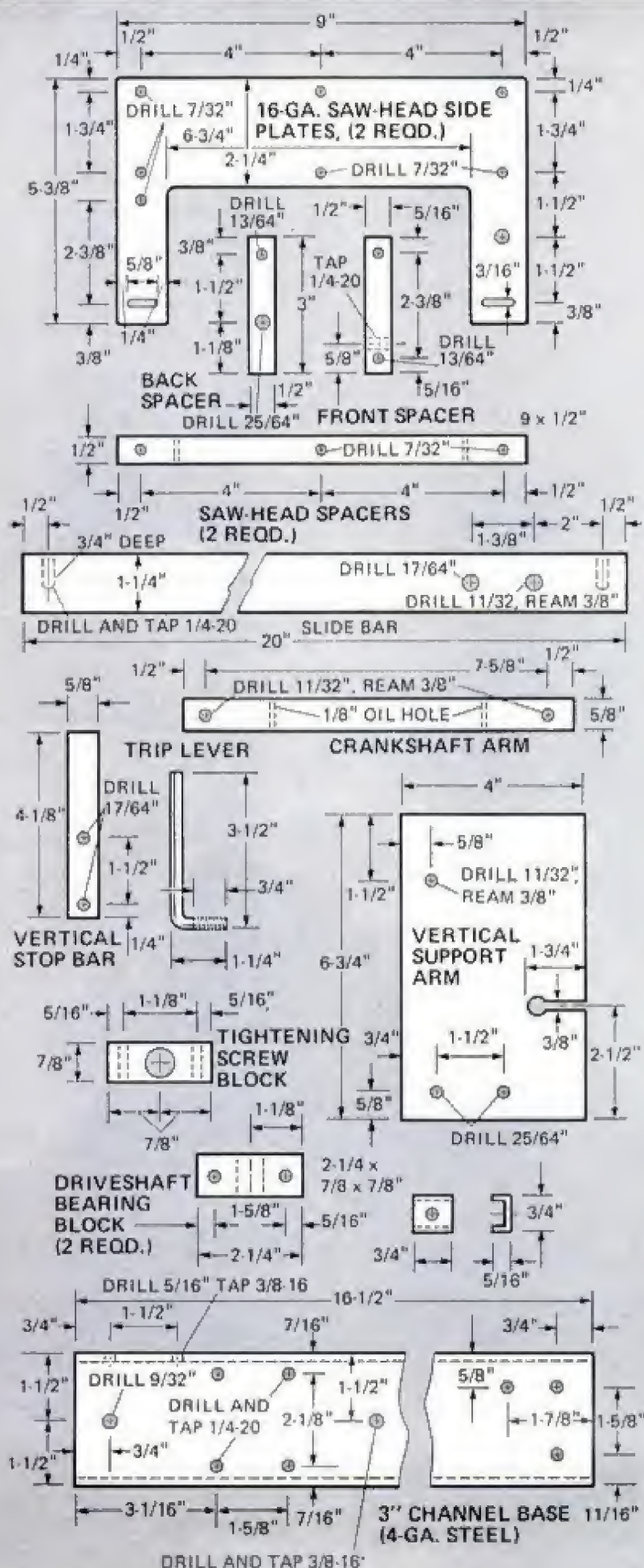
USERS SAY:
"INCREDIBLE!"

Now home owners can have the same crust-free, trouble-free humidifier performance that big, blue-chip manufacturers have enjoyed for years. The patented HAXO WATER CONDITIONER attaches in minutes and presto, lime deposits start to "melt away"—new deposits never form! Minimal maintenance keeps it that way for years!

NO-RISK 1 YR. MONEY BACK GUARANTEE
Imagine! No more repair or replacement costs. No more down time. No more inefficient performance. The HAXO Water Conditioner has no moving parts, uses no chemicals, no electricity. The unit works magnetically, automatically! Write for FREE DETAILS 1 year money back guarantee. Say "goodbye!" and "good riddance!" to humidifier crust, crud, clog AND COST forever.

CIRCUS & CO. Dept. 10
PO Box 521, Morton Grove, Ill. 60053

CUTOFF SAW MACHINING DETAILS AND DIMENSIONS



It's smart to know how



Remember the last time you paid for work done to your car? You said that next time you would do it yourself. You know that you could do it just as good, maybe even better, and for a lot less money.

Well you probably can. More car owners than ever before are doing it now. Here are the manuals that show how to tune it, service it, fix it, and keep it running right. They'll show you how to do everything, and how to do it right the first time.

TOTAL SERVICE MANUALS

0611 AUDI 80K covers all models—73-74	\$7.95
0438 BARRICUDA & CHALLENGER 65-72 all models	\$8.95
0715 BMW 2002 73-74 all models inc 2002A, 2002Si	\$8.95
0679 BUICK 55-75 covers all models	\$8.75
0674 CADAMM all inc SS, Rallye, Sport, 228—67-74	\$7.75
0957 CADRI 2000/2600/2800 covers all models—70-74	\$8.95
0435 CHEVELLE 64-75 inc Monte Carlo, El Camino	\$8.85
0448 CHEVROLET 55-67 inc Impala, Bel Air	\$8.95
0769 CHEVROLET 68-75 inc Camaro, Bel Air, Impala, Caprice	\$8.95
1262 COMET 71-74 covers all 6 & V8 models	\$8.95
0689 CORVAIN 60-69 covers all models produced	\$8.95
0681 CORVETTE 64-74 all 327, 350, 437, 454 models	\$8.95
0940 DART & DEMON inc Custom, Swinger—65-72	\$6.95
0987 DART & DEMON 73-75 covers all 6 & V8 models	\$8.95
0265 DATSUN 810 73-74 covers all models	\$7.95
1551 DATSUN 510 covers all models—68-72	\$8.95
0753 DATSUN 610 73-74 covers all models	\$8.95
0770 DODGE 72-75 all Polara, Monaco models	\$8.95
0714 DODGE & PLYMOUTH VANS 100, 200, 300 vans—67-74	\$8.95
0441 DUSTER covers all 6 & V8 models—70-72	\$8.95
0988 DUSTER 73-75 all models inc Scamp	\$8.95
0422 FALCON, FAIRLAME, COMET all models—60-65	\$8.00
7118 FIAT 124 sport coupe & convertible—69-73	\$8.95
0675 FIREBIRD covers all models—67-74	\$7.75
1148 FORD inc Galaxie, LTD, Custom XL—50-67	\$8.95
0771 FORD 68-75 Custom, Galaxie, XL, LTD, sta wagons	\$8.95
0710 FORD ECONOLINE VANS 100, 200, 300—67-74	\$8.95
1295 GREMLIN & HORNET 70-74 all 6 & V8 models	\$8.95
0688 HONDA CIVIC covers all models—73-74	\$8.95
0536 MERCEDES-BENZ 64-70 all 230, 230, 250, 280 models	\$8.95
0479 MUSTANG all V8 models—65-73	\$8.95
0772 MUSTANG II 74-75 covers all 6, V6, V8 models	\$8.95
0690 NOVA 68-75 covers all 6 & V8 models	\$8.95
0678 OLDSMOBILE covers all models—55-74	\$8.75
0767 PINTO 70-74 covers all 1600/2000 models	\$8.95
0773 PLYMOUTH 73-75 all Fury, VIP, Gran, Suburban models	\$8.95
0676 PONTIAC inc Catalina, Buella, Ventura—55-74	\$8.75
0750 SAAB 90 1900, 1800, 2000 all models—69-74	\$8.95
0717 SUBARU covers all FF, G, GL, GL models—70-74	\$8.95
0912 TOYOTA CELICA 71-75 covers all models	\$8.95
7127 TOYOTA COROLLA 68-74 covers all models	\$7.95
0681 TOYOTA CORONA, Mk II, Pick-up—68-74	\$7.75
0764 VEGA 71-74 covers all 4-cyl models	\$8.95
0171 VOLKSWAGEN BEETLE covers all models—55-64	\$8.95
2201 VOLKSWAGEN BEETLE, Super Beetle, K-G—68-74	\$8.95
0657 VW BAMBET, SCIROCCO 74-75 covers all models	\$7.95
0613 VOLKSWAGEN GASHNER covers all models—74	\$7.95
0932 VOLVO 162, 144, 145 68-74 all models inc S & E	\$8.95

MANUALS-MISCELLANEOUS

1275 CHILTON AUTO REPAIR MANUAL 68-75 all U.S. cars	\$11.95
0720 GLENN AUTO REPAIR MANUAL 57-66 all U.S. cars	\$10.95
1272 BASIC AUTO REPAIR MANUAL a must item	\$3.95
1267 BASIC BODYWORK & PAINTING	\$3.95
1708 BASIC IGNITION & ELECTRICAL SYSTEMS	\$2.95
0480 BASIC AUTO TROUBLESHOOTING for all cars	\$2.95
0629 BASIC TOOLS what to buy & how to use it	\$2.95
5104 AUTO BODY REPAIRING & REPAINTING	\$6.95
0525 AUTOMOBILE RESTORATION GUIDE for all cars	\$3.95
1003 TUNING FOR SPEED, TUNING FOR ECONOMY	\$8.50



FREE with every order

a copy of the car service record book. An easy way to keep accurate track of every repair, adjustment, tune-up, lubrication, purchase, etc.

Add \$1.50 for postage & handling

CARBOOKS, INC. 181 Glen Avenue
phone orders (516) 674-8043

☐ I enclose full payment of \$ or

INDICATE BY NUMBER THE BOOKS YOU WANT

PLEASE PRINT OR TYPE NAME AND ADDRESS

NAME

ADDRESS

CITY

STATE ZIP

SATISFACTION GUARANTEED OR YOUR MONEY BACK

You've tried to fix him before. Yet John's hisses, squeaks and leaks persist. To cure his tank inlet problems, install the new Fluidmaster® 400-A. It's adjustable, fills quickly and quietly, and won't leak because it uses incoming water pressure to shut itself off.

If John has a weeping flush valve, just install a Fluidmaster Flusher Fixer™ Kit. This non-rotting, non-corroding flush valve always seats properly, and has no guides of lift wires to bend, jam, and corrode.

All Fluidmaster products are made of trouble-free Celcon® and stainless steel. They install quickly and easily with no special tools needed. And they all give John back his self control.

FLUIDMASTER, INC.
1800 Via Burton, P.O. Box 4264
Anaheim, CA 92803



What to do when John gives up.

PAPERBACK BOOKS



From ENGLAND on tools and procedures you can use in your shop.

FOUNDRIYWORK FOR THE AMATEUR from patternmaking to building a furnace\$2.50
SECRETS OF SHIPS IN BOTTLES even one ship model in a light bulb 2.50
ELECTROPLATING FOR THE AMATEUR do a good job with almost no equipment 3.00
MAKING YOUR OWN GUITAR, BALALAICA, and VIOLIN—woodworking projects 3.50
LATHE ACCESSORIES how to make and use them for very little money 2.50

MILLING IN THE LATHE including how to mill without attachments, cut gears 1.00
BUILDING A STEAM ENGINE FROM CASTINGS like those casting sets in our catalog ... 2.00
SOLDERING AND BRAZING from fixing the coffee pot to installing plumbing 2.50
USING THE SMALL LATHE the metal lathe in your home shop, lots of ideas 3.50
HOW TO WORK SHEET METAL with a minimum of equipment, some that you build 1.00

Our CRAFTSMANSHIP CATALOG—steam engines, tools, clocks, books—\$1.00—FREE if you order just 2 books from this ad.

CALDWELL INDUSTRIES
BOX 170, 609 E. DAVIS ST.
LULING, TEXAS 75648



INVENTORS WANTED

IF YOU HAVE AN IDEA...

for a new product—or a way to make an old product better, contact us, "the idea people". We'll develop your idea, introduce it to industry, publicize it, negotiate for a cash sale or royalty licensing.

SUCCESS HAS MANY FACES



"CAROUSEL" FIREPLACE

Over \$60,000.00 in royalties already paid to inventor for invention RLO licensed to industry.



"TWIST-OFF" CAP

Trademark and cash payment negotiated by Raymond Lee with manufacturer.



LAWN ROLLER

Invention helped publicize inventor's crane repair business.

TAKE ACTION ON YOUR IDEA!

If you want recognition, financial reward or just credit for having "invented it first", write for our FREE "Inventor's Kit." It tells how your idea may become a reality. It includes a special "Invention Record Form", an important brochure—"Your Invention ... Its Development, Protection & Marketing", and a Directory of 500 Corporations Seeking New Products.



RAYMOND LEE ORGANIZATION, INC.
230 Park Avenue North
New York, NY 10017

Yes, I'd like to find out how to take action on my idea. Rush your FREE "Inventor's Kit No. A-129"

Name Please Print

Address

City State Zip

A Fee-Based Invention Service Company



Get in on the PROFITS in SMALL ENGINE service and repair Start your own money

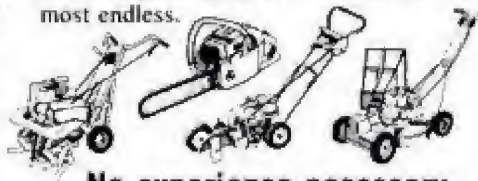
In just a short time, you can be ready to join one of the fastest growing industries in America...an industry where qualified men are making from \$10.00 to \$15.00 per hour...and that's just for labor. Parts, engines and accessories add even more to the profits.



Because the small engine industry has grown so quickly, an acute shortage of qualified Small Engine Professionals exists throughout the country. In fact, it's not unusual for a good small engine man to be three to four weeks behind in the summer and at least a week behind in the winter. When you see how many small engines are in use today, it's easy to understand why qualified men command such high prices—as much as \$17.50 for a simple tune-up that takes less than an hour!

46-million small engines are in service today!

That's right—there are over forty-six million 2-cycle and 4-cycle small engines in service across the U.S.A. That's the official count from the Engine Service Assn., and new engines are being built at a rate of one-million per month! With fully accredited and approved Belsaw training, you can soon have the skill and knowledge to make top money servicing these engines. Homeowners and businessmen will seek you out and pay you well to service and repair their lawnmowers, tillers, edgers, power rakes, garden tractors, chain saws, mini-bikes, go-carts, snowmobiles, generators, snowblowers, paint sprayers...the list is almost endless.



No experience necessary.

You don't need to be a 'born mechanic' or have prior experience. If you can read, you can master this profitable trade right at home, in your sparetime, without missing a single paycheck. Lessons are fully illustrated—so clear you can't go wrong.

BEAT INFLATION!

Cash in on the huge demand for small engine repair.

Work part time, full time right at home - we help you every step of the way.

making business!

You receive trade secrets and business plans.

We guide you every step of the way, including tested and proven instructions on how to get business, what to charge, how to get free advertising, where to get supplies wholesale...all the "tricks of the trade"...all the inside facts you need to assure success right from the start.

Increased Income

"I've had about 8 years experience repairing small engines... but repairs were only minor... until I started the Belsaw Course."



Walter H. Strick Campbell, California

With our famous 'learn-by-doing' training method, you get practical 'hands-on' experience with specialized tools and equipment that you'll receive with your training plus a brand-new 3 HP engine—all yours to keep!

SEND FOR FREE FACTS!

You risk nothing by accepting this offer to find out how Belsaw training can give you the skills you need to increase your income in a high-profit, recession-proof business of your own.

Just fill in and mail coupon below (or send postcard) to receive full information and details by return mail. **DO IT TODAY!**

BELSAW INSTITUTE OF SMALL ENGINE REPAIR

516F Field Bldg., Kansas City, MO. 64111

There is NO OBLIGATION and NO SALESMAN Will Call—ever!

BELSAW INSTITUTE, 516F FIELD BUILDING
KANSAS CITY, MISSOURI 64111

☐ YES, please send me the FREE booklet that gives full details about starting my own business in Small Engine Repair. I understand there is no obligation and that no salesman will call.

Name _____
Address _____
City _____
State _____ Zip _____

You get all this Professional equipment with your course—and it's Yours to KEEP!

Send TODAY for this fact-filled **FREE BOOKLET!**



Tells how you quickly train to be your own boss in a profitable Sparetime or Fulltime business of your own PLUS complete details on our 10-Day NO RISK Trial Offer!



PLUS... you get this 3 HORSEPOWER CLINTON ENGINE YOURS TO KEEP!

THE BARGAIN HUNTER

Top Quality Benches Make Your Work Easier & Quicker

Whether you're a hobbyist, craftsman, cabinetmaker, or wood sculptor, experienced or beginner, The Yankee Wood Craftsman's wide selection of superb European workbenches offers you the exact features you need to do your finest work precisely, quickly. Solid kiln-dried European hardwood construction; pre-mounted specialized vises for horizontal and vertical hold; some models feature

world's finest Sheffield steel vises, provide unique swivel nylon shoulder vise face for firm holding of unusually shaped objects, bench stops, up to 5 drawers, ability to work on 3 or even 4 sides of bench. Large tool tray. Largest choice in U.S. of amateur and professional models, 5' to 8 1/2'. One even folds to store — perfect for apartments. Also world's finest line of hand-forged European carving tools, clamps, and steel and exceptional wooden body planes available nowhere else in the U.S.



SEND TODAY FOR FREE 66-PAGE FULL-COLOR CATALOG/WOODCRAFT MANUAL

Garrett Wade Company, Inc.

Dept. 1PP, 302 Fifth Ave., New York 10001

I want The Yankee Wood Craftsman catalog/woodcraft manual.

Name _____ City _____ St _____ ZIP _____



JUST ONE HAND!

A completely NEW concept in gardening machines! The amazing 2-in-1 TROY-BILT® is not only a wonderfully better roto tiller, it's also a wonderful compost shredder-chopper! It turns your whole garden, however large or small, into a fabulously fertile "compost pile"! So easy to handle, even for ladies and older folks, you guide it with JUST ONE HAND! For complete details, prices, off-season savings, ask for free booklet. Write TROY-BILT Roto Tiller-Power Composters, Dept. 60192, 102nd St. & 9th Ave., Troy, New York 12180.

IMPORTED LOCK BLADE KNIFE

ONLY \$275 each

9" Overall Length
5" When Closed

- Opens instantly
- Sharp and Tough
- Stainless Steel Blade

Flips open instantly and locks automatically to prevent accidental closing. Razor sharp tough stainless steel blade for reliable use and hard, long service. Money back in 5 days if not satisfied. Send \$2.75 plus 25¢ to cover postage and handling.

(Free Knife Catalog With Order)

WESTBURY SALES CO.

P.O. BOX 434, WESTBURY, N.Y. 11590

259 Post Ave.

DEPT. L-2-PM

At Last a New Amazingly Simple GAS TURBINE JET ENGINE

Build from easy-to-follow plans. Length 15", Dia. 8 1/2", Wt. 15 lbs. Fuel: Gasoline or Kerosene. Develops 20 H.P. Ideal project for serious-minded hobbyists, students, scientific and industrial arts classes. Made on 9" metal cutting lathe with milling attachment. For use on small racing boats, model cars, etc. Full size assembly drawings with critical dimensions, bill of materials and photos. Price \$5.00. No C.O.D. SAVOY SCIENTIFIC, 1510 26th St., Box 1394, SANTA MONICA, CALIF. 90406

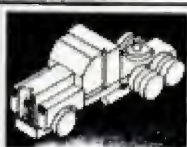


LANDSCAPING

Growing demand — good income for trained Landscape Contractors and Garden/Nursery personnel. Start your own business part- or full time or hobby. Home study course prepares you in 6 months. Certificate awarded. Free booklet describes opportunities. No salesman.

LIFETIME CAREER SCHOOLS Dept. A-54, 2251 Barry Ave., Los Angeles, CA 90064

Name _____ Address _____ City _____ State _____ Zip _____



Make WOODEN TOY TRUCKS Build the "Semi" tractor and trailer, Blue Van, "Dino-Truck", "Hot Rod" Dump Truck from these simple woodworking plans. These toys are designed virtually unbreakable and measure from 6" to 27" long. Free catalog with order. \$3.00 ppd. (Cal. Res. add 1% sales tax) Catalog of more than 50 wooden toy plans, toy making supplies and ideas \$9.95.

LOVE-BUILT TOYS & CRAFTS, 3517 Comby Rd., P.O. Box 769, Dept. PG-2, Antioch, California 94509

AUDIO PROGRAM CONTROL CENTER



\$14.95 PPD. USA

10 inputs, 4 outputs. Switch TV, Short-Wave, Ham, FM to Stereo Amplifier & Recorder. Listen & Record.

POWERCOM CORPORATION

Box 454 Dept 7 Troy, N.Y. USA 12181

FREE VENEERING CATALOG

90 varieties world's rarest veneers, pre-joined veneers, checkerboards, broad choice wood band & art inlays. Illustrated in full color — at reasonable prices. Learn how to create beautifully veneered furniture, bond veneers simply, instantly. Catalog shows simplified contact cement method that you learn fast. Send for free catalog now!

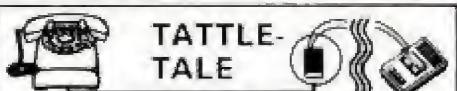
MORGAN VENEERS, Dept. POIK29, Box 18169, Louisville, Ky. 40218

NEW! CONVERT TV TO 6 FT. WIDE SCREEN!

Easy Do-It-Yourself Kit

Project a giant 5'x6' picture onto wall or screen. B&W/Color. Kit contains detailed plans, Inst. and Precision Lens System. Only \$15.95 ppd., or write for free illustrated details.

The Macrocoma Co., Dept. CB, Washington Crossing, PA 18977



TATTLE- TALE

Privately records both sides of all conversations to and from your home or office. Allows your recorder to operate automatically when phone is in use. Connects easily to any phone & cassette unit. NOW \$24.95. Free details via First Class Mail, 5 day money back trial. Order NOW.

KOPIS ENTERPRISES Dept PM, P.O. Box 142, Elmwood Park, IL 60035

INSTANT 110 VOLTAGE POWER ANYWHERE

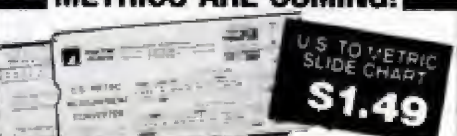
For cars, campers, trucks, boats w/alternator runs all power tools, lights, heaters. NOT a junction box, but a rugged plastic case. Up to 5000 watts. 2 outlets, safety fuse, voltage lite, U.L. Approved. Install easily in minutes. Great for farmers, sportsmen & emergencies. Guaranteed for the life of your vehicle. ONLY 16.95 ppd. plus \$2.00 shipping. Check, M.O., Bank, American Express or MasterCard w/ Exp. date.

KAL SALES, Dept. PM-1, 3575 Park Ave., Waukegan, N.Y. 11195

A YEAR'S INCOME IN 6 WEEKS BLACKJACK PLAYERS

Use my unbeatable, secretly learned system to earn over \$50.00 AN HOUR in any casino. Play relaxed. No cards or charts to memorize, and it works! • 30-DAY FREE HOME TRIAL • You must be satisfied 100%. No obligation. Get a deck of cards and try it. You'll be amazed. FREE DETAILS VIA AIRMAIL. MEL GRANT, Dept. 259, 324 So. First Street, Alhambra, CA 91802

METRICS ARE COMING!



TERLAND METRIC DIST.

P.O. BOX 208 • Round Lake, Ill. 60073

KARATE KUNG-FU

The Greatest Self-Defense System Known to Man!! Learn-at-Home Course reveals hundreds of deadly self-defense secrets which will enable you to protect yourself from any attacker! Easy to learn! FOR FREE COLORFUL BROCHURE AND BOOKLET, Send 25¢ to UNIVERSAL, Dept. 2, Box 19303 Detroit, MI 48239

HARDWARE & PLASTIC GUIDE

436 pages of the most complete illustrated catalogue, for craftsmen, the industry ever produced. Order your copy today. \$3.50 ppd., deduct from 1st \$15.00 order. Dept. PM-26, OUTWATER HARDWARE CORP., 365 River Dr., Garfield, N.J. 07026

DRILL YOUR OWN WATERWELL

With this low-priced outfit you can drill your own water well at a cost of about 12¢ per foot! Also, this unit can be operated horizontally to drill free-flowing springs in hillsides. A big, fact-filled package and 24-page book "How To Drill Your Own Water Well" is just \$1.00 PPD. (Refundable) "WRITE TODAY!"

DEEPROCK MFG. CO., 703 Lafayette Pkwy., Dept. PM 26, Opelika, Ala. 36801

An Atlas Body— In 7 Days

my method of DYNAMIC-TENSION starts giving you results that you can feel and your friends will notice. Big, useful muscles. Gain pounds in weight where needed. Lose "pot belly." Send me your name and address for my 32-page book — FREE CHARLES ATLAS, 49 West 23rd St., New York, N.Y. 10010 Dept. PB

REAL SWITCHBLADE... COMB!

8 INCHES LONG... PUSH BUTTON... "SNAP"—IT'S OPEN! ORDER NOW WHILE THEY'RE STILL LEGAL! This is a REAL SWITCHBLADE. The blade is a COMB!! Terrible GIFT item. Novel and Practical. Fits in pocket. Fine tooth comb is GREAT for slushhairs and Mustache tool! Satisfaction is Guaranteed. Complete with Lock. Only 4.95 + 25¢ Postage. TWO for 9.95 postpaid. S&W KNIFE CO. BOX 35246 P.M., CHICAGO, IL. 60635

For TOOLMAKERS who use the FINEST

GERSTNER TOOL CHESTS Dept. 86, 20 Cincinnati Street, Dayton, Ohio 45407

NEW Improved Accurate Scope-Shot

SCOPE SHOT COMPLETE WITH 250 EXPLODING PELLETS \$3.00. SLINGSHOT \$1.50. 250 1/4" Steel Hunting Balls \$2.99. 2 Leather Pouch & Sling Assemblies only \$1.50. Add 50¢ postage and handling. ORDER NOW from: GENERAL SPORTS, INC., Dept. MB, Lawrenceburg, In. 47025

HEADQUARTERS FOR EVERY TYPE & SIZE AT REAL DOWN-TO-EARTH MONEY SAVING PRICES!

TIRES!

Send for your FREE catalog!

RELIABLE TIRE CO. 1111 Chestnut St. Camden, N.J. 08103

NEW DESIGN—FITS ALL PEGBOARDS!

World's best storage system. Every home, factory, and business needs this pegboard mounted rack and unbreakable jar. Keeps small shop supplies visible and clean. Handy Dandy Cans and Jars: 10 for \$4.25, 50 for \$12.50, 75 for \$22.50. Postage Paid, no C.O.D.'s. Send check or M.O. Dealer Inquiries Invited. WICKLIFFE IND. INC., 28353 LUXONA, P.O. Box 388, PM28, Wickliffe, Ohio 44092

FEBRUARY 1976 173

CLOCK BUILDER'S HEADQUARTERS - USA

Largest selection of kits, movements, hardware

New: 1976 Bicentennial Grandfather Clock Kit

Inspired by original American design of Benj. Chandler, ca. 1776. A clock your grandchildren will be proud of—built by you of the finest materials. Described in 100 page clock catalog.

Grandfather, grandmother, wall, shelf, school, bracket and novelty clock kits!

Choose from 35 different clock kits featuring the finest cabinet work of solid American hardwoods plus the highest grade movements and hardware. Buy plans for as little as \$80 or complete wood kits plus your choice of movements, dials and hardware. There are clocks to fit all budgets yet our insistence on top quality gives you the most value.



"AMAZINGLY COMPLETE" 100 PAGE CLOCK BOOK

Don't order your clock kit until you see the most in-depth clock builders catalog. A fascinating display of 35 clock kits, 30 clock plans, 114 movements, 150 dials, plus brass hardware, hands, hardwood moldings & trim. The hard to find and the unusual are included for both the novice and the experienced horologist.

Send 50¢ for Craft Clock Catalog

OVER 35 YEARS EXPERIENCE

CRAFT PRODUCTS COMPANY

Dept. 1, Elmhurst, Illinois 60126

EXTRA MONEY

'30 to '50

A DAY

Operate a community sharpening service with an investment of \$150. Work from your basement or garage. Our manual guides you in professional methods of grinding, of business promotion and in pricing your work.

• Hand Saws • Circular Saws • Knives • Chain Saws
• Scissors • Pinking Shears • Clipper Blades
• Planer and Dado Blades • Mower Blades

John Rebeck says: "Thanks for shipping Model 331. It has paid for itself many times since I purchased it. Please send latest price list on grinding wheels."

154-A Oliver St.
North Tonawanda, N.Y. 14120

TREYCO **START NOW...WRITE TODAY**

110 VOLT A.C. GENERATORS

60 cycles, 3000 watts. Wt. 27 pounds, 5"x10" Fanbelt driven from car or pickup. Operates T.V. All power tools. Over 13,000 in service. This is our 26th year. Guaranteed 6 months, \$115.50 Postpaid while supply lasts. Our \$1200-watt generator needs no battery. Special price—\$105.00 Postpaid.

Virden Perma-Bilt, P.O. Box 7160 PM,
2821 Mays, Amarillo, Texas 79109

ORIGINAL W.W.II HELMET

(NOT A REPLICA)



\$19.95

PLUS \$2.00 POSTAGE & HANDLING

COLLECTORS! Helmets, Uniforms, Bayonets etc. FREE CATALOG
UNIQUE IMPORTS, INC. Dept. PM1
610 Franklin St., Alexandria, VA 22314



FREE! POWERFUL MUSCLES FAST!

Fantastic New Discoveries in the science of bodybuilding. Add inches of powerful muscles to arms, chest, shoulders and legs. Secrets on trimming the waist with ultra-modern methods—fast! Results Guaranteed! Send for free brochure!

Universal Bodybuilding Box 485 Dept. M
Dearborn, Michigan 48121

JUNGLE TENT HAMMOCK

For Outdoor Comfort—Rainproof top—Mosquito Proof Netting—Zipper Side Opening 28" x 74"

\$29.95

ADD \$2.00

Postage and Handling

Tyco Camping Co.
8344 Leesburg Pike
Box 302
Vienna, VA 22180

CHEAP FUEL FOR HOME, CAR AND BUSINESS

Professional blueprints and manual show how to plan, construct, operate and maintain your own fuel generating plant using garbage, wastepaper and animal manure or field waste as feedstock. \$10.00 postpaid.

ALTERNATE ENERGY SYSTEMS,
P.O. Box 796, Kapaa, Hawaii 96746

U.S. SURPLUS HIGH SPEED ROTARY FILES Hardened Steel. For filing, drilling, milling, carving, routing any metal or wood. Cutting edges from 1/4" to 1", shanks all 1/4". Brand new, in air-tight G.I. packs. Export order add \$1.

32-Tool Set, G.I. cost \$265.00, now \$18.00
14-Tool Set, G.I. cost \$109.00, now \$12.00
Save Even More. Both Sets now \$23.00
Two \$25 Sets (Limited Time) \$40.00
100% Guaranteed. We pay the postage.

U.S. SURPLUS CENTER, Dept. 503
715 Camden, San Antonio, Texas 78215
Texas Orders add 5% tax



If You Want It Done Right, Do-It-Yourself!

FROSTLINE has sew-it-yourself kits for down-filled sleeping bags, parkas, tents, packs and much more. You'll save up to 50% over the cost of comparable ready-made equipment. Easy to follow instructions and a complete money back guarantee.

Send for a Free color catalog today!

Frostline kits

Dept. PM-026
452 Burbank
Broomfield, Colo. 80020

"LISTEN IN" TO POLICE-FIRE RADIO CALLS IN YOUR CAR!

WORKS with ANY CAR—Portable or HOME RADIO! Just PLUGS in—No wiring—No intricate hookups! Switches instantly from regular radio to ALL POLICE-FIRE-EMERGENCY-TAXI-STATE-GOV'T 2 way radio traffic! Works Everywhere—Anytime! Dual Band 30-40 & 150-175 MHz. SEND ONLY \$2.00 (includes \$17.99 value) plus one of each \$10.00 for 1PM Del in USA. COMPLETE with Antenna and Plug-in to use with ANY Home or Portable Radio! Full Instructions—1 year service warranty—10 DAY MONEY BACK TRIAL—SOLD ONLY direct from factory—WESTERN RADIO DEPT., BPM-2, KEARNEY, NEAR, 68847



CATALOG of FULL-SIZE FURNITURE PLANS \$1.00

Wonderland for woodworkers! Over 150 full-size furniture plans! Tables, desks, curio cabinets, chairs—etc. Everything in full-size detail just like the plans fine furniture manufacturers use. Early American, Danish, Modern, Mediterranean, Spanish, English. Your dollar refunded with first order. Send today.

1425 Sherman Ave.,
FURNITURE DESIGNS, Dept. PF-26, Evanston, Ill. 60201

SPIRAL STAIR KIT

DO IT YOURSELF



Adjusts for floor-to-floor heights of 8'1 1/2" to 9'6".

4 ft. Diameter

\$355 FOB

3'6", 4'6", 5', 5'6", 6' diameters available at comparable savings.

the IRON SHOP

Dept. PM-2, 400 Reed Road
Broomall, Pa. 19008

Call or write for Free Brochure.
(215) 544-7100

The Black Watch kit

At \$29.95, it's

★practical—easily built by anyone in an evening's straightforward assembly.

★complete—right down to strap and batteries.

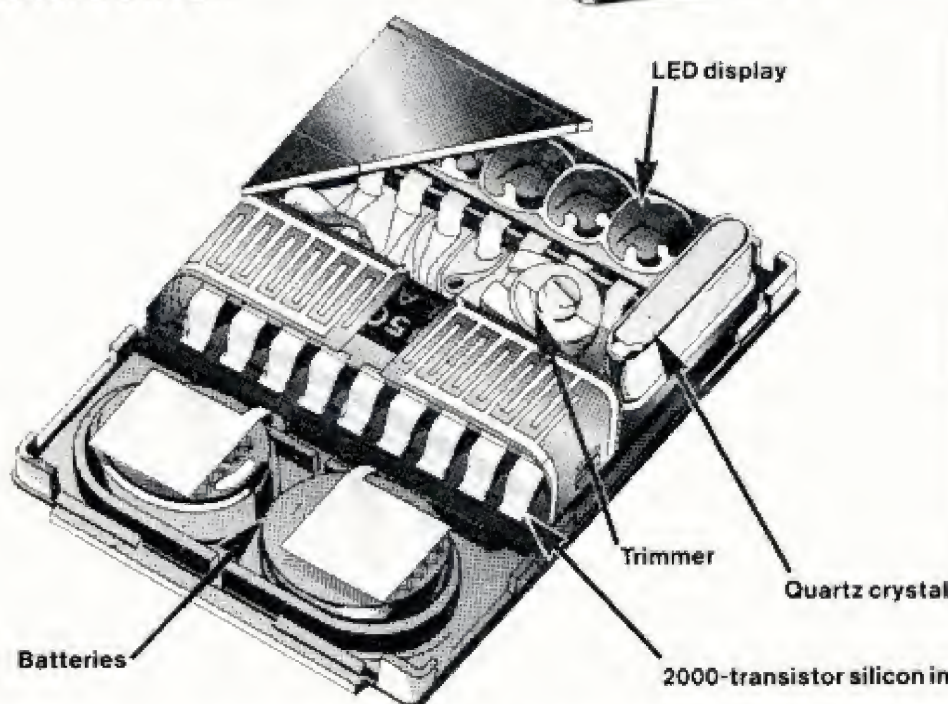
★guaranteed. A correctly-assembled watch is guaranteed for a year. It works as soon as you put the batteries in. On a built watch we guarantee an accuracy within a second a day—but building it yourself you may be able to adjust the trimmer to achieve an accuracy within a second a week.



The Black Watch by Sinclair is unique. Controlled by a quartz crystal . . . powered by two hearing aid batteries . . . it's also styled in the cool prestige Sinclair fashion: no knobs, no buttons, no flash . . . just touch the front of the case to show hours and minutes and minutes and seconds in bright red LEDs.

The Black Watch kit is unique, too. It's rational—Sinclair have reduced the separate components to just four.

It's simple—anybody who can use a soldering iron can assemble a Black Watch without difficulty. From opening the kit to wearing the watch is a couple of hours' work.



Complete kit \$29.95!

The kit contains

1. printed circuit board
2. unique Sinclair-designed IC
3. encapsulated quartz crystal
4. trimmer
5. capacitor
6. LED display
7. 2-part case with window in position
8. batteries
9. battery-clip
10. black strap (black stainless-steel bracelet optional extra—see order form)
11. full instructions for building and use.

All you provide is a fine soldering iron and a pair of cutters.

Please send me

_____ Black Watch Kits at \$29.95
plus \$2.50 shpg. & hndlg.
_____ Stainless steel bands
at \$4.00

NY residents please add sales tax

I enclose my check/MO for \$_____

Name _____

Address _____

IMPORTANT

Print your name and address here →
for use as a shipping label.
Thank you.

Name _____

Address _____

zip _____

FREE 10 DAY TRIAL

If you decide not to keep your Black Watch Kit, return it undamaged within 10 days for a full refund.

Mail to:

sinclair
SINCLAIR RADIONICS
375 Park Avenue
New York, N.Y. 10022



SAVE HUNDREDS OF DOLLARS

Imagine yourself the builder of this attractive ALL PURPOSE BARN 24' X 18' high with easy to follow plans. Appealing to the eye in suburban, farm, ranch, lake area. Many uses as 3 or 4 car garage, boats, campers, store, lodge. Plans call for concrete floor, ceiling joist, plywood loft flooring, suggested window and door location.

Send \$6.00 for plans and material list, 24' X 36' HORSE BARN plans, showing 3 stalls, tack room \$8.00.

HAMMOND BARN, Dept. PM-70
Box 584, New Castle, Indiana 47362

SAVE Up To 90% on GOVT. SURPLUS

SEND FOR CATALOG

Our 31st year! Fantastic SURPLUS GUIDE with 100's of illustrations & 1000's of bargains in hydraulics, electrical, marine, auto, hardware items — and more. A must for hobbyists, sportsmen, machinists, inventors, etc. Send 50¢ to cover postage & handling. For extra quick delivery send \$1. Must include zip.

AIRBORNE SALES CO. Dept. PM76
8501 Steller Dr., P.O. Box 2727, Culver City, Ca. 90230

Name _____
Address _____
City _____ State _____ Zip _____

FUN FLYING! EASY, LOW COST

In the air, on water, on snow—the versatile Ben-sen Copter is everyman's sport craft. Designed for making with hobbyshop tools. Flying instructions come with step-by-step building plans. Buy Ben-sen parts as you need them. Start with the colorful \$5 INFO PACKET. Send the coupon now.

SEND \$5 NOW

BENSEN AIRCRAFT CORP., Dept. PM-26
P.O. Box 31047, Raleigh, N.C. 27612

NAME _____
ADDRESS _____

Adventures in PHOTOGRAPHY

Book sent free on request. Home study course can advance to professional career or profitable hobby. Modern methods accelerate completion. Diploma awarded.

AMERICAN SCHOOL OF PHOTOGRAPHY
Sherman Tunkler, Dept. 22-222 Danbury, Conn. 06816
Accredited Member National Home Study Council

SILVO (BRAND NAME) TOOL CATALOG

Thousands of Exciting Tool Values! Stanley, Skil, Millers Falls, Wellsaw, Dremel, Disston, Helios, Speedy Sprayers, Plumb, Kennedy, Huot, Rockwell, Channellock, Crescent, Vise-Grip, Ridgid, Unimat, Audel Books, Nicholson, General, Indestro, Xacto, Wiss, Pony Clamps, Wen, and many other Nationally Advertised brands of Tools & Supplies. We ship Coast to Coast at prices hard to beat. Send \$1.00 for our big 168 page tool catalog today.

SILVO HARDWARE CO.
107 Walnut St., Dept PM-2, Phila., Pa. 19106

AUTOMATIC SAW SET

Set saw teeth automatically—400 per minute without effort. Perfect hammer and anvil action sets teeth uniformly—no tooth breakage.



FOR HAND SAWS AND BAND SAWS

Write for details
BURR MANUFACTURING CO.
8931 Venice Blvd.
Los Angeles, Calif. 90034

MAKE \$25 to 100 PER HOUR

BADGE-A-MINIT, a complete badge making system lets you make permanent metal pin back badges for fun or profit. Badge parts cost pennies, you sell slogan buttons for up to 75¢ each, photo buttons for up to \$2.50 ea. Get FREE illustrated money making plans by return mail, or send \$34.95 plus \$1.75 for shipping to RPM Assoc. Ltd., Box 618, Dept. PM-26, LaSalle, Ill. 61301

LOCKSMITHING & Key Making

PRACTICAL UP-TO-DATE COURSE — ONLY \$9.95

Teaches you how to pick locks, de-code, make master keys, repair, install, service, etc. Now self-instruction lessons for every handyman, homeowner, carpenter, mechanic, service station operator, fix-it shop, hardware dealer, gunsmith. 55 easy, illustrated lessons. Full price only \$9.95 postpaid. Satisfaction or refund guaranteed. Mail order today!

Nelson-Hall Inc., Dept. BS-2
325 W. Jackson Blvd., Chicago 60606

BUILD YOUR OWN POWER TOOLS

METAL PARTS KITS AT LOW FACTORY DISCOUNT PRICES FOR:

- 12-IN. BAND SAW
- 18-IN. BAND SAW
- 6-IN. BELT SANDER
- SPINDLE SHAPER
- 10-IN. TILT/ARBOR SAW

PLANS Full Size Patterns \$2.00 EACH DEDUCTIBLE

KITS FROM \$23.99 TO \$89.99
Step-by-step plans, photos show how. No machine or tooling. 100% satisfaction. 5-Year Guarantee. Send \$2 for Plans, or 25¢ for Catalog.

GILLION MFG. CO., Dept. PM-2, St. Charles, Mo. 63301

BOAT KITS

BUILD YOUR OWN BOAT & SAVE \$\$\$

FRAME KITS, PLANS, FULL SIZE PATTERNS especially for amateurs. Send \$1 for 128 pg. catalog. Over 160 designs, includes FREE "Boatbuilding Supplies" brochure.

GLEN-L MARINE 9152 Dept T Rosecrans
Bellflower, CA 90706

PLANS AND INSTRUCTIONS FOR

Go Kart	\$2.00
Mini Bike	\$2.00
Mini Car	\$3.00
Pedal Boat	\$4.00
12" Sail Boat	\$4.00
Snowmobile Steigh	\$3.00
Mini Jeep	\$3.00

Send Vehicle's Plans Today!
Chicago, N.Y. 12592

Universal Router/Shaper Table—Ideal for shaping and jointing small materials that are normally difficult to handle. Build picture frames, plaques, or easily add a decorative touch to moldings. Features miter gauge for safe cutting at any angle. Accepts most router Skil, B&D, Stanley or Rockwell

— Add \$2.50 for shipping — Reg. \$16.95
71025-537 P—7 lbs. Special—\$10.98

FIX LAWN MOWERS

FOR FUN & PROFIT! Fascinating new Handbook by F. Peterson gives you the knowledge skilled mechanics learn. **OVER 125 ILLUSTRATIONS** show how to trouble shoot, repair carburetors, engines, balance and sharpen blades, etc. Exploded drawings are extensively used. **INSTRUCTIONS COVER** reel, rotary and rider mowers, preventive and routine maintenance, how to identify brand names, where to obtain replacement parts. How to buy and use a lawn mower. Friends gladly pay \$10 to \$50 to fix their lawn mowers. Try the **HANDBOOK OF LAWN MOWER REPAIR**. Rush only \$7.95 plus 50¢ handling on 10-day money-back guarantee.

EMERSON BOOKS, INC. Dept. 795 B
Reynolds Lane, Buchanan, New York 10511

MILITARY STUFF

1000s of things. **FLIGHT JACKETS, BOOTS, MEDALS, CHUTES, WINGS & RINGS, SURPLUS STUFF** — SEND 50¢ (\$1 for Air Mail) for big 65-page catalog to: **KEN NOLAN, HQ 1, 16901 MILLIKEN, POB C-19555, IRVINE, CA 92713. 714/556-6262.**

BUILD YOUR OWN

CAMPER • TRAILER • 5th WHEEL • COVER • VAN

It's easy! Component kits, plans, & full size patterns especially for amateurs. You **SAVE \$\$\$!** Dozens of models, include pictorial instructions. Send \$1 (refundable) for RV KITS, PLANS, & EQUIPMENT catalog.

GLEN-L RVs 8152P Rosecrans Bellflower CA 90706

BURIED TREASURE

Locate from a LONG DISTANCE! with Ultra-Sensitive **DIRECTIONAL** Locator. SEND FOR FREE INFORMATIVE BROCHURE

RESEARCH PRODUCTS
BOX 13441-AM TAMPA, FLORIDA 33611

25 LIVE SEAHORSES 2.98

Kit has two mated pairs of freshly caught sea horses, including ONE PREGNANT MALE, who will give birth to as many as 25 babies. Marine salt, food and instructions included plus a free marine seal. **ABOVE KIT WITH CUSTOM AQUARIUM, SEA HORSE TREE, SEASHells, CORAL AND SILICA SAND \$3.98**

LARGE DELUXE AQUARIUM AND ALL ABOVE ACCESSORIES WITH 5 MATED PAIRS OF SEA HORSES 12 PREGNANT MALES—OVER 50 SEA HORSES \$10.95

All kits sent post. Via Air Mail. Live Delivery Guaranteed.
Sea Horses, Inc. Dept. PM 274, Box 342096, Coral Gables, FL 33134

MOTOR OIL TESTER

Do you really know when to CHANGE YOUR OIL?

OIL THAT LOOKS CLEAN COULD BE DESTROYING YOUR ENGINE — OIL THAT LOOKS DIRTY MAY BE GOOD FOR THOUSANDS OF ADDITIONAL MILES

Don't just check your oil level, test it at the same time. The **MOTOR OIL TESTER*** will indicate the condition of crankcase oil in minutes using a drop of oil from the dipstick. Test for ACID, CONTAMINATION, DISPERSANCY & VISCOSITY. Evaluate OIL ADDITIVES, Test SYNTHETICS. The **MOTOR OIL TESTER*** is the single most important preventative maintenance tool you can own. It will pay for itself even if it saves just one oilfilter change. It may even save your engine. **FREE BROCHURE. BANKAMERICARD & MASTERCARD OK.**

OIL RESEARCH ASSOCIATES \$695 + \$54 Post. & Handling
Cst. Price add 8% Tax.
ATLANTIC RICHFIELD PLAZA STA. BOX 71024 P. L.A. CA 90071

SAVE ELECTRIC POWER!

Save up to 80% electrical power with this unique, inexpensive, portable, permanent and legal method applicable for shops, homes, factories, businesses, farms, sites. 100% Refund Guaranteed if not scientifically sound or if it employs gimmicks.

Information \$1.00

CONSUMERTRONICS CO.
P.O. Box 1399PM Alamogordo, N.M. 86310



Learn Science At Home

In Your Own Laboratory With These 17 Basic Starters

100X, 200X, 300X Powers Microscope Kit

10X fixed eyepieces with 10X, 20X, 30X objectives on revolving turret with an automatic POWER-CALCULATOR. Rack and pinion focusing with plano mirror illumination. Includes slides, labels, tools and butterfly specimens. A must for any young scientist's laboratory! Order No. 01963-58 . . . \$16.95



Bi-Level \$17.95 Animal Cage

Sturdy plastic and wire two-level cage with connecting ladder and exercise wheel. Perfect for hamsters or gerbils. 12 1/2" high X 14" diameter. Order No. 03425-58 . . . \$17.95

Giant Ant Farm \$7.95

Includes Coupon for Ordering Live Ants

Year's supply of ant food, farm handbook, California sand and coupon for ordering live ants. Order No. 12015-58 . . . \$7.95



Pollution Test Set \$10.50

34-piece set includes all tools needed to perform experiments detecting pollutants in the air, water and on land. Order No. 03921-58 . . . \$10.50



Plasticast Kit \$11.95

Preserve objects by embedding them in clear plastic block. Includes two pints liquid and plastic, hardener, finishing material and five interesting molds. Order No. 12947-58 . . . \$11.95



Bird Feeder \$7.00

Finest grade kiln-dried California Redwood for lasting beauty and durability. Capacity—3 lbs. of seed. 10" X 8" X 8". Order No. 12866-58 . . . \$7.00



Indoor-Electric Greenhouse \$24.95

Maintains consistent humidity. Automatic Wick-Fed watering. Maturity time cut by 40%. Order No. 00787-58 . . . \$24.95



Visible Pumping Heart \$5.50



Enjoy hours of fun assembling this detailed anatomical kit. "Blood" pumps through heart and returns. Amazing real life action! Age 7-adult. Order No. 01015-58 . . . \$5.50

Photo-Lab Kit \$19.95

Complete home-developing kit includes everything you need to make sparkling black and white prints. Easy-to-use instructions included. Order No. 14303-58 . . . \$19.95



Electronic Computer \$31.50

Play 50 computerized games, matching your wits vs. the computer. Predict weather, math calculations—48 others. Fully illustrated instructions. Order No. 03816-58 . . . \$31.50



Asteroid Refractor Telescope \$44.95

50-power scope with 520mm. focal length. Fixed, single eye piece. 25X-50X. Alt-azimuth mount and table tripod included. Order No. 01767-58 . . . \$44.95

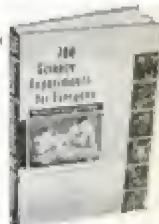
Dwarf Tree Kit \$5.50



Complete kit for growing nine different trees from seeds. Varieties include: Asiatic Cypress; Temples Fan Palm; Far Eastern Pear; Oriental Juniper; Fruit Bearing Apple; Chinese Evergreen and three others. Order No. 13021-58 . . . \$5.50

700 Science Experiments \$6.50

Simple, easy and inexpensive experiments in Astronomy, Botany, Geology, Heat, The Human Body, Electricity and many others. A basic aid and student text. 250 pages. Order No. 04561-58 . . . \$6.50



Rock I.D. Computer \$16.95

Card sorting computer automatically identifies and classifies over 125 commonly found rocks and minerals. Test equipment, ten specimens and instructions. Order No. 03379-58 . . . \$16.95



The Visible Head \$15.95

This anatomically accurate kit allows examination of the brain, spinal cord, vertebrae, inner ear, eye, throat and mouth, neck and facial muscles in detail. Order No. 00094-58 . . . \$15.95

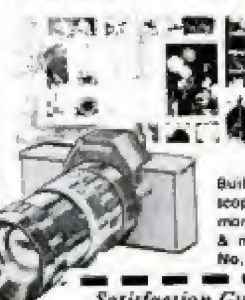
Weather Forecasting Kit \$16.95

Complete with barometer, sling psychrometer, charts anemometer, vane, cloud chart and much, much more. Attractive metal case to hang entire unit on wall. Order No. 12963-58 . . . \$16.95



Optics Lab Set \$29.95

Build a microscope, periscope, telescope and much more. 135 experiments & manual included. Order No. 14311-58 . . . \$29.95



GET THIS
GIANT
1500-Item
Science and
Hobby
CATALOG

SEND 25¢ TODAY

Satisfaction Guaranteed!
Schoolmasters Science 5-T
745 State Circle Ann Arbor, Mich. 48104
ALL PRICES POST PAID — Send Cash, Check or Money Order

Name _____
Address _____
City _____ State _____ Zip _____
☐ Send Catalog

Order No.	Item Description	Price	Total



YOU CAN TRANSFORM YOUR VW INTO A UNIQUE-PICK UP

VW ECONOMY WITH PICK-UP VERSATILITY

HOME INSTALLATION

One weekend using hand tools & no torch cutting or welding with mechanical changes required. • Detailed instructions • Plastic body cutting templates • Factory quality components • Kit includes all needed hardware

The FLATBACK



DEPT. PM 312 EAST 17TH
KANSAS CITY, MO. 64108

SEND

\$1 for color brochure & information
\$5 for installation instructions & templates



SPY "PEN" RADIO



\$2.59

Hear SPORTS, MUSIC, LATEST NEWS AND EVENTS in office, school, bed, etc. Slips into pocket like ordinary pen. Tiny earphone for private listening. NO BATTERIES NEEDED. Pulls in radio waves from air. With ground wire for best reception, although will work without grounding. Complete, ready-to-play. Money back if not delighted. Send \$2.59 each. Add \$1.00 shipping & handling. Johnson Smith Co., Dept. 102, 35075 Automation, Mt. Clemens, Mich. 48043.



Air Car \$4.49
Car of Future!
Rides On Air!
Actual Working Model!

New HOVER-CRAFT glides like magic above tabletops, floors, sidewalks, roads, TVE WATER! TOMORROW'S TRANSPORTATION TODAY! Travels at YOUR COMMAND with NO VISIBLE MEANS OF SUPPORT. Rides on cushion of air. 4" propeller, 48" control fins from push button power unit. Two-color streamline design with bubble passenger compartment, 10" long. Ready to run (batteries not incl.). Send \$4.49 Add \$0.00 shipping & handling. Money back guarantee. Johnson Smith Co., Dept. 102, 35075 Automation, Mt. Clemens, Mich. 48043.

TRANSPORTATION TODAY! Travels at YOUR COMMAND with NO VISIBLE MEANS OF SUPPORT. Rides on cushion of air. 4" propeller, 48" control fins from push button power unit. Two-color streamline design with bubble passenger compartment, 10" long. Ready to run (batteries not incl.). Send \$4.49 Add \$0.00 shipping & handling. Money back guarantee. Johnson Smith Co., Dept. 102, 35075 Automation, Mt. Clemens, Mich. 48043.

Sound Activated Switch

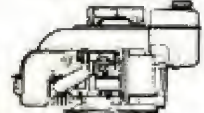
SURPLUS BAR-GAIN! ONLY \$3.95. Turns on lights, bells, horns, sirens, alarms, tape recorders, wireless mikes, etc. Operates by voice, whistle or any sound from across room. Hundreds of fun & practical uses. No mysterious tricks & stunts. Great for experimenters, electronic bugs. NOT A KIT. Completely assembled, wired. Includes sensitive switch which receives sonic signal, transmits relay circuit & electronic switch, crystal mike, schematic. Regular value to \$6. Limited quantity electronics surplus. \$1.95 each, 2 for \$3.00. Add \$3.00 handling. Johnson Smith Co., Dept. 102, 35075 Automation, Mt. Clemens, Mich. 48043.



Make Money Repairing Gas Engines

NEW Small Engines Service Manual

11th edition



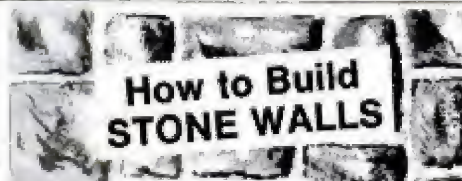
New 11th edition \$7.95

Send Check or Money Order with order and we send postpaid.

Tells and shows you how to fix small gas engines on Lawn Mowers, Garden Tillers and Tractors... and other power equipment.

Repair your own gas engines. Make money repairing for others. New updated 11th edition gives complete information on repairing small gas engines under 15 cu. in. Only universal repair manual of its kind. Over 300 pages. Nearly 900 illustrations. Includes information on nearly every popular domestic and foreign small engine (both 2 and 4-cycle) on the market. Authoritative section on gas engine fundamentals, trouble shooting, and servicing of ignition and carburetors. Down-to-earth information. Illustrated with hundreds of exploded drawings. Easy enough for beginners to understand. Satisfaction guaranteed or money back.

TECHNICAL PUBLICATIONS Div., Dept. PM-276
1014 Wyandotte, Kansas City, Missouri 64105



How to Build STONE WALLS

Walls of local stone offer ageless, natural charm as well as no- upkeep, permanent, child-and-animal proof boundaries. Build one on your own property with the practical information in this heavily illustrated and photo-filled "how-to" book. All about sources of stone, equipment needed, laying out the wall, building techniques, using tie stones, stones of lesser quality, drainage, retaining walls, gates, styles, steps, posts, quarrying, wall maintenance. Everything you need to know for successful, level, sturdy and truly beautiful stone walls. 85 pp., quality paperback, \$3.00 plus 50¢ postage and handling. Satisfaction guaranteed or full refund. Send to:

Garden Way Publishing, Dept. 60192
Charlotte, Vermont 05445

Pride is in the making.

\$300 OFF

Regular \$10.95
\$7.95 ONLY



BELT & WALLET COURSE. Make it yourself, so easy and it's fun to do. Contains everything you need to complete one Belt and one Wallet as shown. Includes pre-cut parts, tools, dyes, buckle, and instructions.

COUPON CONDITIONS

Mail or take this coupon to Tandy Leather Co., locations in most cities nationwide. When ordering by mail be sure to enclose local tax, plus 35¢ for shipping. Limit one coupon per person. Not redeemable for cash and may not be used toward tax or postage. Coupon must be presented at time of purchase. Cannot be used in combination with any other 2808 Shamrock, Dept. WPMU, Fort Worth, Texas 76107. *Retail prices may vary at individual stores.



EXPIRES JULY 31, 1976

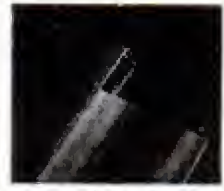
THE PHOENIX AIR-JET ROTOR HELICOPTER



The New 2-Place Homebuilt That's Easy To Fly!

The reason is its patented air-driven rotor system that propels the blades with jets of compressed air expelled at each tip. The air-jet rotor system removes the need for a tail rotor and the complicated gearing systems to drive both the main and tail rotor. It also eliminates all torque effects, making the "Phoenix" a very easy machine to fly!

Add to this greatly-improved performance, safety, stability, and payload utility, and you now have a valid reason to build and fly your own personal helicopter—"Phoenix"!



Air-Jet Rotor Nozzle



Preprototype in Hover

Find out why "Phoenix" literally obsoletes all other homebuilt helicopters—send for our Data Package. It contains a 20-minute record, a 16-page color brochure, specifications folder, and big 4-color poster with all pertinent data about this remarkable new helicopter.

☐ Yes, I want to know more—enclosed is \$6.00.

NAME: _____

ADDRESS: _____

CITY: _____

STATE/ZIP: _____



HELIGYRO CORPORATION
Dept. PM28, P.O. Box 1242, Scottsdale, AZ 85232

Fine! 3-D Sight Magnifiers ENLARGES CLOSE WORK ONLY \$2.98 SMALL PRINT!

UP TO 3 TIMES

See clearer, work faster, more accurately with less eye strain, less fatigue and tension with HEAD BAND MAGNIFIER. Wear like glasses, they'll magnify up to 3x and leave hands free to work.

Produces a 3-dimensional effect, where each detail appears to stand out. FOR CLOSE WORK, REPAIRS, SEWING, HOBBIES, etc. Sturdy, lightweight, adjusts to all sizes. With or without glasses. Fine, sharp prismatic polished lenses. Only \$2.98 + 50c for Post. and Sling. PPD. (2 for \$5.50, 3 for \$8.00) WORTH MUCH MORE! MONEY BACK GUARANTEE.

No Find Products
Dept. HT500, 12 Warren Street, New York, N.Y. 10007



Build Your Own ELECTRIC CAR

Complete details includes battery and motor size, control circuits,

battery chargers, parts availability. Send \$9.95 to

Volts-Wagon

5111 NE 125th Street, Vancouver, Wash. 98665

USE ZIP CODE WHEN ANSWERING ADS

MAKE ANY LENGTH JACK POST

in a hurry

1' to 20' high. Furnish your own 1"-1 1/2" or 2" pipe or most any size wood post.

Satisfaction Guaranteed

BASTECO

Pa. Res. 6% Sales Tax

BOX 142, BADEN, PA. 15005

7.95 POS. add
Send M.O. or check
PAT. 3,027,140



PORTABLE STEAM CLEANER

Steam in 60 seconds

CLEAN:

Engines, Air Filters, Lawn mowers. 3 year guarantee on fire box, coils. Uses liquid soap, propane fired. Weight 120 lbs. Auxiliary pump required on low water pressure.

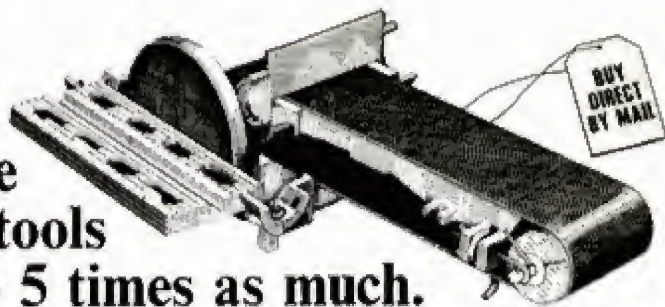
WEDCO MFG. INC., Dept. M-6,
Scott Lane-Box D, Jackson, Wyo. 83301

PUMP DRAINS pools, cellars, laundry tubs IRRIGATES - CIRCULATES - SPRAYS

Heavy duty ball bearing pump. All metal, rust-proof Type XB. Stainless shaft. Use 1/4 HP or larger. 1 HP 1,200 GPH 60" high or 3,000 GPH 25" well. 5,200 GPH max. 1 1/4" in. 1" out. Belt or direct drive. \$17.95 Type P won't rust or clog. Bronze bearing. TO 2,400 GPH. 1" in. 1/4" out. \$11.95 Ppd cash with order. Money back Guarantee.

LAWCO, 80 Hwy 206, Belle Mead, N.J. 08502

Unadorned power tools ...they do the same job as tools costing up to 5 times as much.



We skipped the chrome to save you money... but we did not skip anything on performance. Actually, we skipped more than just chrome, we cut out every costly frill that wasn't absolutely needed.

Our tools are not exactly flashy. We are the first to admit it. But in articles covering test results on AMT tools, written by leading publications such as Popular Science, our tools have been praised over and over again. In spite of their low prices, our tools are full scale and offer full performance and precision.

HERE'S HOW WE DO IT... First, we don't claim our tools should sell for five times the price! Just that our tools do the same job... with the same accuracy, ease and speed... and will last at least as long. AMT tools cost less to make and are sold direct. They are bona fide quality power tools used by serious amateurs and professionals alike and if sold in retail stores would be much higher in price. We use no magic, let's be specific:

SIMPLICITY... AMT tools are soundly engineered to eliminate every frill and gimmick—to minimize material and production costs. Machined parts are used only where they're needed. Unadorned cast iron and aluminum save you a fortune.

DIRECT-FROM-FACTORY SAVINGS... You save a bundle, yet we offer a double guarantee backed by a 45-year-old company with millions of satisfied customers... and hundreds of orders pour in daily. **LARGE VOLUME**... Our own foundry and large mass production facilities plus large buying power all work to keep costs down.

STANDARD PARTS... Our designs use standard hardware items wherever possible. By avoiding custom-made parts we pass on tremendous savings to you.

If you are looking for power tools that perform like units costing many times our low prices, order today and you'll be one step closer to many hours of woodworking satisfaction.

Bill Monty

JOINTER-PLANER... 4" x 22". Cast iron ground adjustable tables. For planing, joints, bevels. Cuts to 1/4" depth. Fence adjustable 0° to 50°. Steel Knives, dual guards. Use any motor. Precision ball bearing industrial model, \$10.00 add'l. Wt. 19 lbs., f.o.b. factory.

\$3780

TWO GUARANTEES

10-DAY MONEY BACK GUARANTEE

Try any of these power tools and compare it with any similar machine at any price. If not satisfied, return it for prompt, no questions asked refund. We pay the return shipping charges.

10-YR. FULL SERVICE GUARANTEE

Any part or parts of these AMT power tools (except motor which carries a one year guarantee) which become inoperative for any reason within ten years after purchase date will be repaired or replaced by the factory with no cost to the purchaser other than postage.

AMERICAN MACHINE & TOOL CO.
4th & Spring Sts., Rogersford, Pa. 19468

AMERICAN MACHINE & TOOL CO., Dept. PM26, Rogersford, Pa. 19468

Please send me the units checked. Payment in full enclosed \$_____ or \$5 deposit each item enclosed, balance C.O.D. I must be fully satisfied or will return unit within 10 days for full refund. No questions asked.

- ☐ 8" Power Saw at \$29.95
- ☐ Standard Rip Fence at \$4.50
- ☐ Long Cabinet Rip Fence at \$5.50
- ☐ Ball Bearing Spindle at \$9.50
- ☐ Belt Sander at \$28.00
- ☐ Disc Sander Attachment at \$12.50
- ☐ Mitre Gauge for Sander at \$1.95
- ☐ Jointer Planer at \$37.80
- ☐ Ball Bearing Spindle at \$10.00

NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

NOTE: Take advantage of these same low prices at our Rogersford factory showroom at 4th and Spring Sts. (9 to 4:30 weekdays, 9 to 12 Sat.).



Brand new electric motor developing full 1 h.p. 17 lbs. (Purchased separately, \$29.85). With any AMT machine here. **\$24.90**

POWER SAW

8" tilt arbor saw... cross-cuts, rips, mitres, cuts, completely assembled with ground cast iron table, safety guard, splitter, mitre gauge. Less blade, motor. Rip fence for easier work alignment, \$4.50 add'l. Ball bearing model, \$9.50 add'l. Takes 1/2 h.p. motor or larger. standard blades, attachments. Wt. 22 lbs., f.o.b. factory.



\$2995
FREE OFFER. cabinet base plane, with one piece of 1/4" plywood, convert your \$29.95 saw into a floor model with a huge 27" x 24" top. Takes cabinet rip fence, \$5.50 add'l.

BELT SANDER

A precision unit, it changes from horizontal to vertical in seconds. Heavy sander includes 4" x 36" sanding belt. Uses 1/2 h.p. or larger motor. V-pulley drive and multi-purpose drive spindle. Disc sander accessory, \$12.50 add'l. Mitre gauge, \$1.95 add'l. 18 lbs., f.o.b. factory. **\$2800**

3' WOOD LATHE

6" swing. Same precision and speed as \$40 units. Sturdy cast iron with tubular steel bed. Lever action tail stock. Two-speed pulley, fits any motor. Set of 3 high speed turning chisels, \$6.95 add'l. 4" face plate, \$2.50 add'l. 15 lbs., f.o.b. factory. **\$1980**

4' WOOD LATHE

12" swing. Industrial size, does same job as \$75 units. Tubular steel bed rails, screw action tail stock, 3-speed pulley. Use any motor. 3 high speed turning chisels, \$6.95 add'l. 4" face plate, \$2.50 add'l. 30 lbs., f.o.b. factory. **\$3910**

DELUXE BALL BEARING 4' WOOD LATHE...

12" swing, similar to 4' model with heavy duty, double shielded, lubricated-for-life ball bearings. 3 high speed turning chisels, \$6.95 add'l. 4" face plate, \$2.50 add'l. 30 lbs., f.o.b. factory. **\$4910**

WOOD SHAPER KIT

Makes beads, coves, moldings, tongue-and-groove joints, etc. Accurate cuts at high speeds. Sealed greased-for-life ball bearings. Less wood. Takes 1/4 h.p. motor or larger, standard cutters. Optional hold down assembly, \$3.95 add'l. 9 lbs., f.o.b. factory. **\$2595**



BUY DIRECT
USE THIS HANDY
ORDER COUPON
NOW

NOW! GET 2 REAL OLD INDIAN HEAD CENTS-Only \$1

Only \$1 brings you 2 old Indian Head pennies issued before 1908. (One set to a customer.) These scarce coins offered to get your name for our mailing list. You will also receive a copy of the most wonderful catalog of coin offers in America. Littleton Coin Co., Dept. RD-22 Littleton, New Hampshire 03561



CLASSIFIED ADVERTISEMENTS

Rate: \$2.90 per word payable in advance each insertion. Bold face capitalized words—75¢ per word additional (First word set in Bold Face at no extra charge, Zip Code Free). Minimum insertion ten words. To be inserted under proper classification, copy must be in our office by the 10th of the second month preceding date of issue. The next available issue to place an advertisement in America's No. 1 Classified Section is April. The closing date is February 10th. Send remittance payable and order to Popular Mechanics, ATT.: H.E. Kappel, Class. Adv., Mgr., 224 West 57th Street, New York, New York 10019. As a consumer service and in cooperation with our mail-order advertisers who use post office box addresses for their convenience in handling your order, Popular Mechanics maintains a register of such mail-order advertisers containing their complete name and street address, which is available to you upon request.

When answering advertisements please use the zip code number

AUTOMOBILES

34 PROVEN METHODS To increase your gas mileage send \$5.00 to: Auto Technician, 20 Sevier, Clarksville, TN. 37040.

SAVE GAS. Give your car more pep, power and gas economy for less than \$5.00. **FREE** details. Ariel, Box 3803, Bayamon, P.R. 00620.

SAVE Gas Remove Smog Devices. Details \$4.00. Ross, Box 607, Titusville, Florida 32780.

"50 MPG Carburetors—Do they Exist? Free Details." Madison, Box 206-5, Berea, Kentucky 40403.

SANDBLASTERS. Easy removal of rust, paint, scale. \$129.50 up. Pressure-fed work on low air supply. Catalog-25¢. Tip Sandblast Manufacturers, 1330 Market, Youngstown, Ohio 44507.

QUICK OIL CHANGE. One permanent installation. Connects directly to drain plug on pan. **FREE** literature. Sea Haven, Box 1201, Glendora, California 91740.

GAS Savings. remove smog devices. Details \$4.00. Nor-Cal, Box 214932, Sacramento, Ca. 95821.

BEAT POLICE RADAR On Highways and in Courts! Amazing New Report Reveals How To Detect, outwit Radar, Discover Legal Loopholes, Unpublished Radar Frequencies, and more. Act Now \$9.95. Consolidated Western, Box 1836, Rockville, Maryland 20850 Guaranteed!

INCREASE Mileage. hp. Exhaust heat runs accessories. Plans \$3.00 To: Berthlaume, Box 9604, Providence, R.I. 02940.

ECONOMIZE! Build Electric Car or Welder! 400A Generators \$140. Info 25¢. Cenaco, B777, Bethany, OK 73008.

EASY Tune Up. Guide. L. Green, 628 So. 5th, Pocatello, Idaho 83201.

VANS. Name Your Own Price!!! Full Details. Enclose \$1.00 Postage And Handling. IGDS, P.O. Box 3242, West Elmira, New York 14905.

DEAD BATTERY FROM FORGOTTEN HEADLIGHTS? NO MORE! Turn off headlights automatically with Ignition switch. Instructions. Kits. Free Details. The Assistant Corporation, 7224 S.W. 102 Street, Miami, Florida 33156.

ELECTRIC VOLKSWAGON PLANS AND PARTS. Plans \$20.00. We have all the necessary parts in stock. Dealer inquiries invited. Precision Products, 7313 Boudinot Drive, Springfield, Virginia 22150. Tel. (703) 451-7522.

33% OFF Delta CDI. Radar "Snooper", QI Lights, CB, Gauges, Tools. Free Catalog. Time Machines, 29M Falmouth St., Brooklyn, NY 11235.

MIDGET CARS

PEDAL CAR KIT. Sensational New Fun Car You Pedal! Open Frame Speedster Type. The Ideal Sport, Work, Exercise Vehicle. Easy To Build! Details \$1.00. Pedal Engine Corp., Box 1648, Largo, Florida 33540.

YOUR AD IN POPULAR MECHANICS WILL BE SEEN By more than 5,000,000 active buyers for your products and services. It costs only \$2.90 per word. And, if you wish to run all or part of your ad in bold capital letters—you can do so for as little as 75¢ per word additional. Act now! Send your Classified ad to: **POPULAR MECHANICS, CLASSIFIED DEPARTMENT, 224 WEST 57TH STREET, NEW YORK, N. Y. 10019.**

AUTO SUPPLIES & EQUIPMENT

LIGHT Guard warning when headlights on, Ignition off. Guaranteed. \$6.95. G. Reed, 8414 Encino Ave., Northridge, CA. 91324.

"ALTERNATOR Generator Rebuilding Book." Information: Hedelund Engineering, POB 5777, Las Vegas, NV. 89102.

REVOLUTIONARY Auto Air Conditioner You can build for About \$50. **SAVE GAS.** **FREE** Detailed Information. Space Age Research Co., Dept. PM2, Box 270, Columbus, Indiana 47201.

PARTS: Army jeep and truck parts. Spare Parts & Equipment Co., P.O. Box 751, Lexington, Kentucky 40502.

UNIQUE Ignit Continuously Monitors Ignition Performance. Q-ARC, Box 47876, Los Angeles, Calif. 90047.

DISK BRAKE PACKER pack Bearings without removal of wheels rotors calipers brakes lines. Trem Products, 78 Page Rd., Bedford, Mass. 01730.

AUTOMOTIVE Tools & Equipment, Nationally Advertised Brands at Discounted prices for Mechanics. Send Self-addressed Envelope for current specials. Associated Distributors, 401 Augusta St., Cincinnati, OH 45202.

CAR OWNERS. solve many future car problems. Trouble Shooting Chart, included free. Emergency Clothes Saver, send \$1.00. Charts, P.O. Box DC, Monterey Park, California 91754.

MOTALOY Ring Valve Job while you drive. \$6.75 Postpaid—Two \$12.50. Guaranteed. Andris, Dept. 263B, Box 34237, San Francisco, California 94134.

AMAZING. Tested VX-6 restores old batteries, extends new! Mechanically sound batteries extended 5 years. Moneyback Guarantee. \$3.98 unit, \$39.50 doz., Ppd.—Specialty Brokers, 520 Grant, North Augusta, S. Car. 29841.

NEW Discovery—End Battery Failure—Lifetime Guarantee—\$3.98. Cakot Enterprises, 129 Hopkins, Jersey City, New Jersey 07306.

SAVE Gas, Oil, Repairs. Details Free. Motaloy, 2532 Superior, Chicago, Ill. 60612.

HOME MADE Vapor Injector. Increases Mileage. Instructions \$2.00. Vidmar Crafts, Freeburg, Illinois 62243.

MOTORCYCLES, BICYCLES, MOTORSCOOTERS, & SUPPLIES

GO-KART, MINI-BIKE, ELE-BIKE, 4 WHEEL bike-car. LEARN to weld instructions. ALL for \$2.00 Request picture of beautiful brunette. E.J. Sales, Box PF 3084, Centerline, Mi. 48015.

AMERICAN Indian Motorcycle Parts. 119 East Huntington, Monrovia, California 91016. 213-447-4078.

ILLUSTRATED Catalog. 25¢. Parts and Accessories. Custom and Stock. For Most Makes and Models. Motorcycle Supply, Box 159M, Fairbury, Illinois 61739.

HONDA. \$25.00. Other Bargains. Send \$1.00 (Refundable). Motorscooter, P443, Bend, Oregon 97701.

MOTORIZED BICYCLES—PLANS!!! Electric, \$2.00 ... Gasoline, \$2.00 ... Both, \$3.00 ... Guaranteed ... Britf, 956 Springdale, Atlanta, Ga. 30306.

1000 MOTORCYCLE BARGAINS Used Bikes \$39.95 up rebuilt Honda Engines. Parts and accessories all makes. Discount bulletin \$1.00. Bunico 146P.M., Covington, Virginia 24426. Phone 703-962-3885.

HONDA. Yamaha, Harley-Davidson Parts. Discount Catalog 25¢. Cyclorama, Georgetown, Illinois 61846.

FLATHEAD ZEPHYR Motorbike conversion kit. Complete, ready for installation on most 26 inch coaster brake middle weights. 3 hp 4-cycle, chain and belt drive, automatic clutch, Headlight, tail light, stop light and wiring. Aircraft aluminum frame. Doesn't prevent pedal operation. Easily removable. Details with photo \$1.00. Stairstep Engineering, Box 764, Columbia Falls, Montana 59912.

AVIATION

AIRBOAT Propellers, Engines, Hubs, Mounts, Supplies. Corvair. V-W Conversions. Removable Airdrives. Catalog \$1.00. Banks-Maxwell, Box 3301E, Ft. Worth, Texas 76105.

ULTRA-LIGHT HANG GLIDERS From world's largest manufacturer. Unsurpassed quality & safety. Rogallo plans—\$5.00. Kits, Complete gliders, Free Rogallo & Icarus Information. Free-Flight, 12424 Gladstone, Sylmar, California 91342.

HANG GLIDING Handbook. 200 Pages, \$5.95 postpaid. Poynter, Box 4232-S, Santa Barbara, CA. 93103.

BUILD—SINGLE-PASSENGER JET HELICOPTER. Easy, inexpensive. Detailed plans, drawings—\$6.00. Helicopter, Box 7153, Baltimore, Maryland 21218.

ALL About Ballooning. Handbook \$3.95. Aerostation, Box 141, Long Sault, Ontario, Canada K0C 1P0.

VERTEX MAGNETO. \$200; Plans for VW Engine Conversion, \$7.00; Both used with Teebie Two, Tachometer, gauges, instruments. BAC, 78 E. Stewart Ave., Lansdowne, Pa. 19050.

HANG GLIDER. Weekly newsmagazine! \$7/24 trial, \$12/52. Box 1860-DPE124, Santa Monica, Calif. 90406.

HOVERCRAFT

AERO-CAR Amazing Hovercraft built easily with ordinary tools. Lawnmower engine power. Carries one man plus. Hovers, flies forward, backward, Sideways over Land/snow/water. Complete construction plans and brochure. \$5.95. Aero-Projects, Box 5118PM, Clinton, New Jersey 08809.

HOVERCRAFT Plans All Sizes Tested Designs Catalog \$1.00. Universal Hovercraft, Box 261, Cordova, IL. 61242.

BOATS & TRAILERS

BOAT KITS, HULL KITS, FRAME KITS, PLANS & PATTERNS. World's Largest catalog, over 300 modern designs for the amateur in fiberglass, plywood, strip planking, steel, aluminum, cement, from 7 to 70 feet. **SAIL-Plans,** Day Sailers, Motor Sailers, Ocean Racers, Trimarans, Catamarans, **POWER-Cruisers,** Trawlers, Run-a-bouts, Fishing Boats, Kayaks, Inboard & Outboard Hydroplanes, Tunnel Boats. Also complete boat-building materials, sails, fiberglass, plywood, etc. Send \$1.00 for catalog or \$2.00 for catalog plus boat-building guide to Clark Craft, 16-P, Aqua Lane, Tonawanda, New York 14150.

FIBERGLASS BUILDER'S MATERIALS. Lowest factory prices in cloth, mat, roving, resin, epoxy, foam, bronze, nails, plywood, mahogany. Send \$1.00 for literature or \$2.00 for literature plus booklet on mold making and "How to" fiberglass. **CLARK CRAFT,** 16-P1 Aqua Lane, Tonawanda, New York 14150.

BOAT PLANS, FRAME KITS, FULL SIZE PATTERNS! Easy, proven methods especially for amateurs include step-by-step pictorial instructions. Huge 128-page catalog shows: Sailboats-Powerboats-Inboards-Outboards - Jets - Houseboats - Cruisers - Hydroplanes - Trawlers - Catamarans - Ski Boats - Tunnel Hulls - 8' to 49'. New "One-Off" Fiberglass Designs! Also fastenings, fiberglass, rigging, hardware, sails, spars, boat trailer plans, "how-to" books. Send \$1.00 for catalog plus Free "Boatbuilding Supplies" brochure. Glen L Marine, 9152 Dept. MP, Rosecrans, Bellflower, Calif. 90706.

CANOE! Kayaks! Factory Direct quality kits, from \$30.00. Many different models. Canvas, hulls. Strongest construction materials. Free literature. Sportscraft, Box 636-P, Allentown, New Jersey 08501.

FIBERGLASS Canoes, Kayaks, and Duckboats. Many exciting models. Easily assembled kits. \$49.95 up. Free literature. Riverside Canoes, Box 5595-AB, Riverside, Calif. 92507.

NEW 1975 Outboards ... Top Brands ... 6HP \$375 ... 15 \$549 ... 40 \$718 ... 50 electric \$1030 ... 70 electric \$1230 ... All sizes. Evinrude-Scott-McCulloch-Parts. Handling \$1.00. Electra Marine, 610 Merrick Road, Lynbrook, New York 11563.

CANOE, Kayak Kits—Wood Canvas, Molded Fiberglass—Free Catalog. Trailcraft, Inc., Box 60686, Concordia, Kansas 66901.

BOAT KITS. Factory Molded Fiberglass. Assemble yourself, save half factory built cost. Sailboats: 16'—\$797; 21'—\$1399; 26'—\$2295; Power Cruisers: 22'—\$1599; 24'—\$2365. Easy Terms. Free Catalog. Luger, Dept. BC-76, 3800 West Highway 13, Burnsville, Minnesota 55337.

FREE Catalog. Kayaks, Canoes, Sailboats, Pirogues. Fishing boats, Duckboats, Plans, Patterns, 41 models. Outdoor Sports, Box 1213-P, Tuscaloosa, Ala. 35401.

CONSTRUCTION Plans. Floating Docks, Ramps; \$3.00; Floating Bathouse \$8.00. Floyd Lucas, Box 246, Libby, Montana 59923.

STAINLESS Steel Screws, Small Quantities. Free Brochure; Elwick, Dept. 223, 230 Woods Lane, Somerdale, N.J. 08083.

CAMPERS AND TRAILER KITS—PLANS

CAMPER/TRAILER KITS. Plans. Full Size Patterns especially for amateurs. Save! Build your own RV! Dozens of models for domestic and import vehicles. New gas-saving models, pickup covers, fifth wheelers. Van Conversion plans \$5.00 Pictorial instructions assure professional results. Send \$1.00 (refundable) for illustrated details Plus RV Kits/Equipment catalog. Glen LRV's. 9152 PM Rosecrans, Bellflower, Calif. 90706.

MODULAR Tent Trailer Plans. Illustrated Brochure 25¢. KNH Products, Box 494, Waukesha, Wisconsin 53186.

MARINE EQUIPMENT AND SERVICES

CONVERT Auto engines to marine. 68 Page Catalog, 50¢. Lehman Manufacturing Company, 800 Elizabeth Avenue, Linden A, New Jersey 07036.

AUTOMATIC Boat Bailer, \$6.95; Information Write: DePersia, Grand Haven, Michigan 49417.

Continued on n

MARINE EQUIPMENT & SERVICES

(Continued from preceding page)

MARINE Engines, conversions, parts, equipment. Catalog Free! Stokes Marine Supply, Coldwater, Michigan 49036.

ATHLETIC AND BODY BUILDING COURSES

INCREASE HEIGHT! 2-6". 35¢ Guaranteed. Taller—YF, 232 Front, Napoleon, Ohio 43545.

ARMS, 18+ INCHES IN 90 DAYS Or Refund! Revolutionary Arms Specialization, \$3.00—Complete! (Karate—Free Information) Phenoministics, Box 2810, Gresham, Oregon 97030.

DYNAMIC MUSCLES FAST! Guaranteed! Goliath Enterprises, Box 933F, Wheeling, Illinois 60090.

HUGE MUSCLES FAST! 35¢. Guaranteed. **MUSCLES**—ZW, 232 Front, Napoleon, Ohio 43545.

SPORTING GOODS AND EQUIPMENT

GOLFERS, install rubber grips yourself, save 65%. Free information available. MCM Enterprises, 6230 West 29th Place, Speedway, Indiana, 46224.

CARBIDE Lights, Solid Brass with four inch Chrome Reflector. Ideal For Campers, Cave Explorers, etc. \$11.25 Postpaid. Carbide Fuel Available (Write for Prices). Miners Lamps, Box 912, Iron Mountain, Michigan 49801.

ARCHERY Lowest Discount Prices. All top brands. Orders shipped same day received. Money-back guarantee. World's Largest Supplier. Free catalog. Anderson Archery Corporation, Grand Lodge, Michigan 48837.

FANTASTIC THROWING KNIFE—Unusual, balanced, UNBELIEVABLE—IT WORKS! Steel, 10" long, instructions. Send \$5.00. Kung-Fu, Box 163, Cumberland, R.I. 02864.

HUGE Sportsmans Catalog low direct factory prices. fishing, Hunting, Archery, reloading Camping. Send \$1.00 Refundable. Herters Inc., Dept. CPM, Waseca, Minn. 56093.

SWISS ARMY TYPE KNIFE, Precision stainless steel. 12 tools in one! Large and small cutting blades, Boy Scouts, campers, fishermen. \$6.98 postpaid. Gitco, 4900 Foster, Suite 110C, Skokie, Illinois 60076.

CUSTOM KNIFEMAKER'S Supply. P.O. Box 308-PM, Emory, Texas 75440. Catalog \$1.00.

CAMPING EQUIPMENT & TENTS

SWISS ARMY TYPE KNIFE, Stainless steel 3 1/4 knife. 12 Tools in one perfect for the Fisherman, Camper and the Handyman. \$6.98. House of Products, 569 11 Avenue, Paterson, N.J. 07514.

FISHING, TACKLE, LURES

FREE Catalog: Reels, Bods, Lures, Fishing Accessories, Lure Parts. Camping and Backpacking. Lowest Prices. Cabela's, Inc. Dept. 5276, Sidney, Nebr. 69162.

FISHERMEN! Build your own casting, spin, fly or salt water rod from world's largest selection, \$3.00 brings you catalog: J. Lee Cuddy, Dept. E, 450 N.E. 79 St., Miami, Florida 33138.

EARTHWORMS, LIVE BAIT

GREY Nightcrawlers make money raising or Retailing Fishbait—Free Details—Fain's Wholesale Bait—Edison, Ga. 31746.

EARN Money Raising Fishworms For us! Exciting details free! Oakhaven-56, Cedar Hill, Texas 75104.

FREE Literature, Profitable Business Raising Fishworms, Crickets. We Teach you how to Raise and Sell. Write today. Carler Fishworms, Plains, Georgia 31780.

HYBRID Redworms, 5000-\$15.00; 20,000-\$30.00, postpaid with Raising Instructions. Brazos Worm Farm, Box 4185, Waco, TX 76705.

RAISE Grey Hula Redworm Soilless Method, Three Oaks, Dresden, Tenn. 38225.

HUNTING, GUNS, DECOYS

PELLET GUNS And accessories. Sensible, enjoyable shooting anywhere. Finest adult models; satisfaction guaranteed. Free catalog. Write Air Rifle Headquarters, Grantsville, WV 26147.

WORLD'S LARGEST SUPPLIER OF GUN PARTS Offers a 150 Page Catalog. Send \$2.00 to: Numrich Arms, Box PM, West Hurley, N.Y. 12491.

POULTRY & GAME BIRDS

BLUE-EGG ARAUCANAS, YOKOHAMAS, REDCAPS, Dominiques. Over 67 varieties Baby Chicks, Beautiful 24-page full color catalog. Send 25¢. Murray McMurray Hatchery, M166, Webster City, Iowa 50595.

QUAILS, Incubators, cages, supplies catalog. Marsh, 14216 Brookhurst, Garden Grove, Calif. 92643.

RABBITS, CHINCHILLAS, FUR BEARING ANIMALS

PUT High Protein Meat on your table—Raise rabbits successfully, 68 page illustrated booklet tells how. 50¢ includes handling and mailing. American Rabbit Assn., 36 Arba Bldg., Bloomington, Illinois 61701.

RAISE Chinchillas. Guaranteed income. Illustrated catalog \$3.00. Refundable. DeShon Chinchilla, Route 2H, Roanoke, Indiana 46783.

AMAZING PROFITS!! \$10,000 Yearly Raising Rabbits for Wool and Breeding. Send \$1.00 for Details. American Angora, Malta 12, Montana 59538.

\$500-\$1000 MONTH Plan raising rabbits for us. Details 25¢. White's Rabbitry-PM, Hudson, Ohio 44236.

GROW YOUR MONEY AT HOME, RAISING CHINCHILLAS. Illustrated Book, \$4.00. Arran Chinchilla, R.R. 8, London, Ontario N6A 4C3.

PETS—BIRDS, CATS, HAMSTERS, ETC.

SKUNKS, Raccoons, Pets. Catalogue 50¢. Trails End Zoo, St. Stephen, S.C. 29479.

HORSES, LIVESTOCK

"HOW TO TRAIN HORSES"—FREE Book tells how to break, train, make money with horses. Beery School, 1102, Pleasant Hill, Ohio 45359.

ELECTRICAL SUPPLIES

ELECTRIC MOTOR SUPPLIES! Equipment Plans! Modequip, Box 7266, Kansas City, Missouri 64113.

ELECTRONICS

DISCOUNTED CB RADIOS, ACCESSORIES, All Popular Brands, ESCO CB Mart, Box 1167P, St. Joseph, Mo. 64502.

FREE—Price list—Name-Brand High Fidelity Speakers. James Neville, 10636 N.E. Fargo, Portland, Oregon 97220.

PLAN Electronic Auto \$2.00. Electromech, 388 E. 300 N. #18, Springville, Utah 84683.

BATTERIES, GENERATORS

BATTERY Reconditioning Kit, includes molds, material, instructions. Apex Engineering, 3100 Ramona, Alascadero, California 93422.

ENGINES, MOTORS, MAGNETS

REWIND Car Generator for 110 VAC. Power Plant Plans \$2.00. Schmauss, 1228 East Cass, Tampa 33602.

RUN Three Phase Motors on Single Phase! Three Methods! New Illustrated Manual. \$3.00 Guaranteed! Lindsay, Box 12-J, Bradley, IL 60915.

WINDING Lesson, A.C.-D.C. Armatures, \$3.50. Data Company, 512 Kensington, Kansas City, Mo. 64124.

TOOLS FOR SALE

HIGH SPEED STEEL drills 13 pieces, U.S. made, 1/16 to 1/4 by 64ths. Metal index container, \$7.25. Specialty Sales, Box 244, Lake Grove, N.Y. 11744.

MACHINERY, TOOLS, & SUPPLIES

ROUTERS. Low cost, unique, patented Bench Model Radial Arm Router will cut any shape from sheet, wood or plastic, using simple template. Write for free literature. Westflex Corp., 287 Riverside Ave., Westport, Conn. 06880.

STAINLESS Screws stop rust! #6-32x1/2" \$2.10/50. Catalog 35¢. Gartmann Associates, Box 1005D, Delran, NJ 08075.

4" METAL Cutting Lathe \$54.50. Taig, Dept. D, 15048 Proctor, Industry, Calif. 91746.

MILLING Cutters, lathe milling attachments, Catalog \$1.00. Potter, Box 73, Cedar Rapids, Iowa. 52406.

SANDSAW BLADES, Any Size. Free catalog. Parker, R4, BX735, Sonoma, Cal. 95370.

SMALL Foundry furnaces. Supplies. Free literature. Pyramid Products, 3736 South 7th Avenue, Phoenix, Arizona 85041.

PLANS, Tube bender, Press, Break, Info., P. O. Box 56, Campo, Calif., 92006.

1400 CATALOGS Listed and Described! Sources for EVERYTHING Imaginable! Rush \$2.00. MASTERLOG, Box 24413-V, Oakland, California 94623.

UNIMAT Lathes—Maximats—Metals—Micrometers—Catalog \$1.00. Campbell, 1424 Barclay, Springfield, Ohio 45505.

STAINLESS STEEL Nuts, bolts, screws. Hard to find sizes sold in small lots. Price sheets. Fastening Products, Box 151, Cheltenham, Pa. 19012.

CHAIN SAW CHAIN—Save to 40% on first-quality, fully-guaranteed Chain, Bars, Parts, Sharpening Equipment for all makes saws. Free Catalog. Write today. Zip-Penn, Box 43073-A77, Middletown, Ky. 40243.

VERTICAL Mill YOU Can Build. Plans \$3.00. McKinstry, Box 6344-F, Santa Ana, CA. 92703.

HIGH SPEED Drill set, 10 pieces, 1/8 to 1/4, plastic case, \$5.00 postpaid, guaranteed. Karl Enterprises, 1716 Vanderbilt Road, Kalamazoo, Michigan 49002.

TABLESAW Top \$19.95 Your Powersaw conversion brochure \$1.00 Refundable, Box 1174, Mt. Clemens, Mich. 48043.

WROUGHT Iron Scroll Bender, also Universal Metal Fabricator. Start profitable, wrought iron business. Descriptive literature 50¢, refundable with purchase. Brenda J Industries, 1825 Channing, Ferndale, MI. 48220.

BUFFING & POLISHING

BUFFING AND POLISHING COMPOUND KIT Contains assortment of 4 bars plus buffing and polishing instructions. Send \$4.00. Satisfaction or Money Back. Schaffner's, Dept. PM276, Pittsburgh, Pa. 15202.

WELDING, SOLDERING, PLATING

ELECTROPLATING Equipment, Portable Platers, Supplies, and "Know-How." Build your own tanks for nickel, chrome, etc. Easy-to-install PVC liners. Rectifier components—all sizes. Schematics, parts lists, formulas, operating instructions for all plating. Guaranteed to save you 25%-75%. Some good used units for sale. Free Details. Platers Service Company, 1511-PM Esperanza, Los Angeles, California 90023.

CUTTING Torch, convert to LP Gas. Save 80%! Torch \$45.00 Tip \$5.00. B&C Sales, Box 182, Orem, Utah 84057.

GOVERNMENT SURPLUS

JEeps \$52.50- CARS \$31.50- 1,000,000 ITEMS: GOVERNMENT SURPLUS- COMPLETE INFORMATION- YOUR AREA- \$2.00. MONEY BACK GUARANTEE—Government Information Service, Dept. PM2, Box 623, South San Francisco, California 94080.

JEeps \$52.50! — CARS \$31.50! — COMPLETE INFORMATION — \$2.00, Box 99494 B, San Francisco, CA 94109.

1976 SURPLUS Army, Navy Store, 56 Page Illustrated catalog. Send \$1.00. Ruvel, 3037 North Clark, Dept. 2-J, Chicago, Illinois 60614.

"U.S. GOVERNMENT SURPLUS DIRECTORY." How, Where to buy 100,000 items (including Jeeps) . . . low as 2¢ on dollar! Most complete information available . . . \$2.00. **SURPLUS DISPOSAL**, Box 6586-AB, WASHINGTON, D.C. 20009.

GOVERNMENT SURPLUS, How and Where to buy in your area. Send \$2.00. **SURPLUS**, 30177-PM HEADQUARTERS BUILDING, Washington, D.C. 20014.

JEeps!!! PICKUPS!!! 100,000 items direct from government. Your area. Latest information & surplus categories: \$2.00 **MONEYBACK GUARANTEE**. Order manual #157, from "Dependable Products", Box 113, Vista, California. 92083.

GOVERNMENT LANDS FROM \$7.50 ACRE! Vacationing, Farming, Investment! Exclusive "Government Land Buyer's Guide" . . . plus "Land Opportunity Review" listing lands throughout U.S. Send \$2.00, Surplus Lands, Box 6588-AB, Washington, D.C. 20009.

JEeps, TRUCKS, Typically from \$52.40 . . . Automobiles, Boats, Motorcycles, Airplanes, Typewriters, Tools, Clothing, Sports, Camping, Photographic, Electronics Equipment . . . 200,000 Bid Bargains Nationwide Direct From Government . . . Low as 2¢ on Dollar! Surplus Catalog and Sales Directory \$1.00 (refundable first order). National Surplus Center, 240 Eastcass-PPM, Joliet, Illinois 60432.

SURPLUS Bargains—War, government, Industrial surplus at savings to 80%! Clothes, boots, coats, tents—bargains for farm, home, outdoors. Send for free catalog—must give zip code. Surplus Store, Sioux Falls, S.D. 57102.

HOBBIES AND COLLECTIONS

LICENSE PLATES—Ten Different \$3.50 Postpaid. Buckley, 210 Hillside Court, Janesville, Wisc. 53545.

COLLECT Military Medals. List 50¢. Vernon, Box 387PM, Baldwin, N.Y. 11510.

COLLECTING Political Items? List 50¢. Campaign Americana, Box 275PM, Merrick, NY 11566.

DOLLHOUSE MINIATURES Illustrated catalog \$1.50. Hobby Craft Miniatures, 118 West Main, Marshalltown, Iowa 50158.

COLORFUL BICENTENNIAL COMMEMORATION. Beautifully detailed, impressively accented, fast-selling parchment plaque of "Old Ironsides", priced to sell at \$5.00. You can earn huge profits! For sample and details, send \$2.00 to: U.S./Foreign Imports, Dept. 67, 322 North "J" Street, Lake Worth, Florida 33460.

DECALS, EMBLEMS, PATCHES

CUSTOM Designed Embroidered Emblems, Decals. Inexpensive. Free Catalog. details. Southern Emblem, Box 8PMB, Toast, North Carolina 27049.

EMBLEMS, Quality Patches, Beautifully Embroidered. Made to Order from your Design. Low Cost, Fast Service. Free Catalog with Design Guide. Donalyn Creations, Box 247PM, Cliffside Park, N.J. 07010.

FREE Catalog—Iron-on heat transfers. Beautiful Multi-Colors. Sample \$1.00. Specialty Wholesaler, Princeton, Iowa 52768.

T-SHIRTS CUSTOM PRINT YOURSELF. Sample-Letters-Instructions \$1.00. Ed Skorch Associates, R2, Bangor, Michigan 49013.

STAMP COLLECTING

YOURS FREE! 55 Valuable Red China old and new postage stamps previously banned to Americans by the U.S. Gov't. At last you can legally own them—you may never have another chance as supplies are strictly limited so act fast! This spectacular and genuine offer given to introduce Kenmore's sensational world-wide Stamps-On-Approval Service for FREE examination. Buy \$2.00 or more and get valuable bonuses or buy nothing—return selections—cancel service anytime. In either case the 55 Red China stamps are yours to keep FREE. Send 10¢ for mailing to: Kenmore, Milford CR-289, New Hampshire 03055.

(Continued on next page)

STAMP COLLECTING

(Continued from preceding page)

A STAMP FROM EVERY COUNTRY IN THE WORLD! First of its kind! One stamp from every stamp-issuing country in the world. From places in today's headlines—like Israel, Portugal, Viet Nam—and places you may never have heard of, like Aitutaki, Botswana, Nauru. Total of 229 stamps—only \$2.95. Also, other exciting stamps to examine free, buy any or none, return balance, cancel service anytime. 40-page catalog and 229 countries are yours to keep for \$2.95. Send Today! Harris, Dept. T-34, Boston, Mass. 02117.

FREE! BIG BARGAIN CATALOG—NEW EDITION Listing thousands of bargains including U.S. & B.N.A. stamps, packets, albums, accessories and supplies. Also, fine stamps from our approval service which you may return without purchases and cancel service at any time. Jamestown Stamp, Dept. E26PM, Jamestown, N.Y. 14701.

FREE Mint British Colonials from Antigua, St. Christopher, Nevis, Sarawak, Turks, Caicos, Tristan Caymans, St. Vincent. Free with approvals. Viking, Great Neck, NY 11021.

CLEARANCE. Twenty Different Packets 50¢. Without Approvals. Norgie, Wyckoff, N.J. 07481.

WOW! 110 ALL DIFFERENT GERMANY 10¢. Commemoratives, Airmails, High Values, Big Catalog, Bargain lists. Also, fine stamps from our approval service, which you may return without purchases and cancel service at any time. Jamestown Stamp, Dept. A26PM, Jamestown, N.Y. 14701.

COLORFUL Miniature set of 8 only 10¢. Approvals. Goritz, Box 76457-PM, Atlanta, Georgia 30328.

819 U.S.A. (Plenty Commemoratives). Approvals. Send 25¢ Handling. Galewood, Box 346, Winston-Salem, N.C. 27102.

RUSSIAN Space Collection including Souvenir Sheet, \$1.00. Russian Approvals, Snedco, Walwick, N.J. 07463.

50¢ BRINGS You 100 pictorials plus worldwide approvals. Capt. Shaw's Stamps, Box 277, Ocean Park, Maine 04063.

SPECIALS US commemoratives 211 different \$1.00. 32¢-\$.30, 40¢-\$.50, 50¢-\$.10, 60¢-\$.20, 65¢-\$.35, airmails 36¢-\$.10 61¢-\$.50, no approvals. Regency Stamps, Box 8854, Pittsburgh, PA 15221.

50 DIFFERENT Pre-1945 United States. Including Commemoratives. Only 25¢ with profit-sharing approvals. 25 United States Airmails, 75¢. Universal, Box 5D, Kenosha, Wisconsin 53141.

BREATHTAKING Beautiful. 50 different mint Monaco pictorials-commemoratives only \$1.50 with mint complete set approvals. Pagoda, Box 132P, Sidney, Ohio 45365.

FREE. U.N. Mint Set. Approvals. Hildebrand, Box 5645, Redwood City, California 94063.

FREE Mammoth Collection, Scott's, Master Global Albums, When You Buy Approvals. Bargain Stamps, Box 5345, Santa Ana, Ca. 92704.

BECOME A Stamp Dealer. \$1.00 brings 30 set stock. Resale value \$3.00. Stamps, Box 27, Fremont, Michigan 49412.

U.S. COMMEMORATIVES. 50 DIFFERENT 25¢. Approvals included. LLOYD'S, Box 5001, Monroe, Louisiana 71201.

10 ISRAEL Stamps Free to approval applicants. W-B Stamps, Wilkes-Barre, Pa. 18703.

100 TURKISH 10¢. Approvals. Box 212, Dept. P.M., New Hampton, N.Y. 10958.

TWO NUDE Sets Plus 100 Others 35¢. Approvals. Coleman, 411M Hawthorne, Smithville, Mo. 64089.

U.S. 6 DIFFERENT Commemorative plate blocks \$1.00! 30 different mint U.S. commemoratives \$1.00! 9 different mint U.N. sets \$1.00! Approvals. Gordon Davison, Hillsboro, New Hampshire 03244.

100 DIFFERENT British Empire 10¢. Approvals. Gibson, Box 34, Lansdowne, Pa. 19050.

65 DIFFERENT NUDES \$2.00. 80 Diff. \$3.00. No Approvals. Kemp, 9952 Tamarack, Pacoima, California 91331.

20 HISTORICAL U.S. Commemoratives 20¢. U.S. Approvals accompany. PINTO STAMP CO., Box 111, Park Ridge, Ill. 60068.

SINGLE STAMPS 2¢ and up. Mounted in books. TRUST STAMP COMPANY, P.O. Box 100-P, Jamaica, New York 11435.

FREE Surprise collection sent with approvals. Gould, 1784 Union, San Francisco 94123.

PENNY! Approvals! Regardless catalogue! Kloster, 4164 52nd St., San Diego, Calif. 92105.

BUILD Large U.S. Collection Economically. Sherman, Box 15355G, Philadelphia, Pa. 19111.

800 DIFFERENT Stamps, \$1.50. Smith, 508-A Brooks, College Station, Texas 77840.

100 OLD United States between 1861 and 1939. \$1.00. Ed Roush, 423 Shepard, Mansfield, Ohio 44907.

U.S. BARGAIN. 50 Different 25¢, with beautiful worldwide, approvals. Stamp Center, Kennebunk, Maine 04043.

TEM Different Nudes; 20¢. Approvals. Stamp Farm, 2M87, Oxford, Wis. 53952.

100 DIFFERENT United States Commemorative, 50¢ with Discount Price List. Shelton, Box 547C, North Miami, Fla. 33161.

SCARCE Guinea UN Airmails \$2.25, catalog 25¢. Approvals. Stamphaus, Box 533, Salisbury, Mass. 01950.

U.S. MINT Specials! Flag Set complete \$1.50. 1¢, 2¢, 3¢ Famous Americans (21 different) \$1.50. Free List. Brooks, 2601 Avenue "U", Brooklyn, N.Y. 11229.

VIETNAM 25 Different 10¢ approval. Sam Chazen, Box 95, Ozona Park, N.Y. 11417.

110 DIFFERENT U.S. Commemoratives. \$1.00. Stamps, 7607 Larchview Drive, Dallas, Texas 75240.

OLDER U.S. ON APPROVAL. SURPRISINGLY GOOD SELECTIONS FOR ADULT COLLECTORS. RIVERTOWN, BOX 188P, LOWELL, MICHIGAN 49331.

WORLDWIDE New Issues—Free Weekly Illustrated Lists. Brooks, 2601N Avenue "U", Brooklyn, N.Y. 11229.

50 DIFFERENT Old U.S. Revenue Stamps \$1.00. Winchester Stamps, Box 3592, Mansfield, Ohio 44907.

"WHOLESALE" U.S.—Foreign Pricelist and catalog Free! Everything Guaranteed. Schneider, Box 1240, Grand Rapids, Michigan 49501. "We accept Master Charge."

BETTER GRADE U.S., Canadian Stamps for advanced collectors. Borgen, Box 645, Seiad Valley, Calif. 96086.

225 DIFFERENT Worldwide. 25¢. Approvals. Tibbets, 8675 Meadow, Downey, California 90242.

FREE New used Congo animal set. Approvals included. Alpaughco, Box 225, Highbridge, N.J. 08829.

DOLLAR Brings 100 worldwide collection and assortment U.S. pictorials plus approvals. Satisfaction or instant refund. Cookstamps, 66 Belmont Road, Dept. C., Rochester, New York 14612.

FREE Worldwide packet. Penny approvals. Froehlich, Box 412A, Morton Grove, Illinois 60053.

50 DIFFERENT Argentina-10¢. Approvals. Gobestamps, Box 690, Saco, Maine 04072.

FREE Stamp Catalog: 3,000 different packets by countries, topics. Ullery, 1016 Meridian, Mishawaka, Indiana 46544.

SOUVENIR Sheet, 10¢, approvals accompany. L & L Stamps, Box 34344, Houston, Tx. 77034.

FREE First Day Cover, Approvals, Gall, Box 96, Coopersburg, PA. 18036.

EXCHANGE. Send 100-200 different foreign with 35¢. Receive different. Patterson, Lancaster, New York 14086.

CANADA: Ten Late Commemoratives 10¢, Canadian Approvals. Harley Boardman, Little Valley, New York 14555.

"MARS CONQUEST"—15¢ with Space approvals. Potomac Stamps, Washington, D.C. 20015.

FREE! Beautiful Surprise nudes—Approvals included. Summif, 1146A-49th, Brooklyn 11219.

50% DISCOUNTS! Worldwide approvals. Premium. Gains, Box 788, Mattoon, Ill. 61938.

207 DIFFERENT Triangles, Topicals, etc. Value \$7.00. Only 25¢. Approvals. Free catalog and coupon worth \$1.00. Jayto Stamps, Port Huron, Michigan 48060.

GOOD Stamps at 3¢ each in world packet of 250. Moose stamp free. Sunshine Stamps, Star Route, Damariscotta, Maine 04543.

U.S. CANADA Price List, 140 pages, 700 Illustrations, Stamp identifications—50¢. Thom, Box 17021, Minneapolis, MN 55417.

FREE. Huge bargain bulletins. Or try 121 different. U.S. \$1.00, 100 different Nudes, \$2.50; 500 different U.S. plus \$21.00 value in foreign \$8.50; 1000 different German, \$9.35. No Approvals. M & J Associates, 2831 Emerald Dr., Walnut Creek, Calif. 94596.

PICTORIAL Set Free To Approval Applicants Stating Wants. Caslo, Box 927, Largo, Florida 35540.

U.N. MINT 25 Different \$1.00. Philpot, Box 111, New Berlin, Wis. 53151.

STAMPS Free! New Issues—New Countries—Triangles—Rockets—Olympics—Scouts—Birds—Flowers—Animals—Also Old Canadian and U. S. Stamps. Plus complete illustrated Canadian Stamp Catalog. Send 10¢ for mailing. Gray Stamp Co., Dept. A, Toronto, Canada.

WORLDWIDE Collection—10¢ with approvals. Castle, Box 14330-PM, West Allis, Wisconsin 53214.

SEND only 5¢ for Worldwide Collection of over 50 different Singapore, Granada, Chad, etc. Contains old and new issues, sports, animals, etc. You will also receive interesting Lists and Certificate worth 50¢ toward purchases. Goliath Co., Dept. TP-1, Bethlehem, N.H. 03574.

GERMANY 200 Different \$1.00 To Packet-Approvals Applicants. Fies, Box A6P, Thornville, Ohio 43076.

TREMENDOUS SAVINGS Beginners or advanced collectors. Foreign 2, 3, 4 cent approvals. Better sets and singles. Postage Paid, S & P Terry, Linda Lane, Milton, New Jersey 07438.

TOPS! 100 Popular Poland Stamps (all different) only 25¢. Mystic, Dept. PS 1, Camden, New York 13316.

50 SPORTS PICTORIALS 25¢ with approvals. Arbour, 3727 Downey Dale, Randallstown, MD 21133.

UNITED STATES APPROVALS: Leg Stamp Company,

ICELAND Collection. Twenty different, dollar. Approvals. Sandell, 701 Sherwood, St. Paul 55106.

"CIPEX" U.S. Souvenir Sheet . . . \$1.00 with approvals. Jester Stamps, Georgetown, Del. 19947.

FREE British Stamp with approvals. Chapmans, Box 487-B, Galesburg, Michigan 49053.

WOW! 100 Scarce Stamps—Tremendous Bargain, Triangles, Diamonds, Beautiful Commemoratives—10¢ With Approvals. River City Stamps, Box 14792, Austin, Texas 78761.

FREE! Macao "Map", Rwanda, Antigua. Approvals. Keating, 1745 N.E. 2nd Street, Ocala, Florida 32670.

CENTRAL And South American stamps on approval. Metric, Box 607, Nampa, Idaho 83651.

MAGNIFICENT! 94 WORLDWIDE STAMPS—20¢. Commemoratives, Pictorials. Approvals. George Connel Associates, Box 22A, Landing, New Jersey 07850.

400 MIXED U.S. 35¢. Approvals, Wright, Box 753-M, Hagerstown, Maryland 21740.

OWN Exotic 100 Different. 10¢. Approvals. Stump, 212A12 Rosedale, New York 11422.

100 DIFFERENT U.S. 50¢. Jim Cash, Box 63, Nineveh, Indiana 46164.

BOSTON TEA PARTY. In 1973 the U.S. issued a set of four stamps commemorating the Bicentennial of the Boston Tea Party. This complete mint set is yours for just 50¢ when requesting our U.S. and world wide approvals. Fullner, Inc.; Box 2177, Dept. BG, Virginia Beach, VA 23452.

200 DIFFERENT Worldwide, 25¢. Approvals. Anish, 22 Quinley Way, Waterford, Conn. 06385.

FREE Worldwide with approvals. Stamps Unlimited, Box 2295, Kalamazoo, Michigan 49003.

50 YEARS Old, fifteen different United States, over fifty years old—25¢ with approvals. Jaxon, Box C11-P, New Rochelle, New York 10804.

AMERICAN BICENTENNIAL. Complete set (6) plus large multicolored souvenir sheet from Upper Volta, 35¢. Topical approvals, LeBlanc, Box 110-P34, Glen Cove, New York 11542.

GIANT Collection—213 Stamps. All complete sets including Space sets, Famous Paintings, Olympics, Wild Animals, Exotic Birds, and many more exciting sets. This bargain from London—Yours for 10¢ in unused stamps! to introduce approval bargains. Broadway Approvals, Dept. TC6, 50 Denmark Hill, London S.E. 5, England.

FIRST DAY COVERS Three Different U.S. with cachet send \$1.00. Approvals, Crescenta Stamps, Box 405, Verdugo City, California 91046.

SPACE COLLECTIONS. Big savings. 100-\$1.95, 200-\$4.95, 400-\$9.95, 500-\$18.95. Sunset Stamps, 33 Majorca Drive, Rancho Mirage, California 92270.

USA BICENTENNIAL. Patrick Henry, Paul Revere—Grenada's latest Commemoratives—Free! Approvals plus 10¢ Bonus Sets. William Deems, 226 Race, Ravenswood, West Virginia 26164.

GIANTIC Wholesale discounts. Lists, \$1.50 retail stamps your choice, 25¢. Blue Chips, Box 34203, Washington, D.C. 20034.

FREE! 55 Different, including Triangles, Space, Others! Excellent Approvals, Baird, PM44, Box 8128, Portland, Oregon, 97207.

CANADA 75 Different 25¢. Approvals, Oroszky, Box 1, Sarnia, Ontario, Canada

COINS, TOKENS, CURRENCY

101 DIFFERENT Lincoln Cents \$5.95, 101 Wheat Cents, many before 1940 \$3.95, 13 different Indian Cents \$10.95, 41 Buffalo Nickels, all clear dates \$9.00, 21 different Mercury Head Silver Dimes \$10.95, 21 different Silver Washington Quarters \$19.95. Postpaid, Free Lists, Dept. PM-2, Charles Southwick, 150 Speen Street, Framingham, Massachusetts 01701.

THREE Buffalo Nickels and price list \$1.00. PARK Coin, 4400 Excelsior Blvd., Mpls, Mn. 55416.

FREE: Lists of thousands of Stamps and Coins. No Approvals, Bryson, 612M White, Toledo, Ohio 43605.

FIVE Different U.S. Mint Error Coins \$2.00. Coin Lists Free. Sayers, 1000 Unaka, Johnson City, Tennessee 37601.

BARGAIN Coin List, 25¢ (Refundable). Economy, Box 92, Buzzard's Bay, Massachusetts 02532.

TWO UNCIRCULATED LINCOLNS 1969S, 1970S and CATALOGUE 10¢ MAC'S DICKSON, BOX 197, SAN RAMON, CA 94563.

SEND 10¢ for New Edition valuable Guidebook "HOW TO COLLECT COINS." Also included, 5 foreign coins from Turkey, Spain, etc., and, best Coins and Supplies Catalog in America. Littleton Coin Co., Dept. VB-1, Littleton, N.H. 03561.

JAPANESE Invasion, Malays set nine notes \$2.50 Uncirculated. Catalogue 50¢, Shultz, Box 746P, Salt Lake, Utah 84110.

BONNIE REPLICAS: U.S. \$1,000.00 Bill; \$1.00. Confederate States \$500.00 Bill; \$2.00. \$1,000.00 Bill; \$3.00. Wells Fargo \$20.00 Gold Certificate; \$5.00. Powszucks, 247 3rd Ave., Stanley, Wis. 54768.

5 DIFFERENT Banknotes from Indonesia only 10¢! Our big price list of Banknotes & Coins also included. Littleton Coin Co., Dept. PC-1, Littleton, New Hampshire 03561.

BICENTENNIAL Proof Eisenhower Dollar, \$10.00 Free Coin Catalog. Village Coin Shop, Dept. P, Plaistow, N.H. 03865.

EXOTIC Laos Coin Free, Approvals, Catalog. Send 10¢ Postage. Lexington Coin Galleries, Dept. MP2, Box 447, Lexington, Mass. 02173.

COINS, TOKENS, CURRENCY

(Continued from preceding page)

SET Of Four Curious 8 and 12 sided, round and square shaped coins from Pakistan. Send only 10¢. Mystic Stamp Company, Dept. CM-1, Camden, New York 13316.

GOLD COINS Of the World. Beautiful Low Prices. Plus thousands of United States Coins. Free price list. Please send long, airmail envelope. Self-addressed, stamped, Silver Center, Box 22171-M, San Francisco, California 94122.

COLLECT Coins for profit. How to start, Where to sell. List of valuable coins. Check your change. Send \$1.50. Halbert's Sales, 12414 Evergreen Drive, Lynnwood, Washington 98036.

LINCOLN CENTS 1909-1939 Ten Different \$1.90—Twenty Different \$3.50. George Plan, Graysville, Ala. 35073.

ANTIQUES, RELICS, INDIAN GOODS AND CURIOS

ORIGINAL Antique Telephones. Illus. 1976 Catalog 30¢. Telephone Co., Turtle Lake, Wisc. 54889.

ARROWHEAD Collections bought. Write total number and types your Indian Artifacts Collection. Pay you cash. Wilson, Box 3136, Dallas, Texas 75201.

INDIAN Relic list, Arrowheads \$4.00, doz. Folsom, \$5.00 each. G. Secrist, Deerfield, Missouri 64741.

SELLING 10,000 Indian Relics. Arrowheads. Knives, Spearheads, Scrapers, Etc. List Free. Lear's, Glenwood, Ark. 71943.

TELEPHONES, Parts, Advertiques, Largest Variety. Large Catalogue. 65¢. Phonero, Box 277, Melrose, Wisc. 54642.

10 BEAUTIFUL Arrowheads \$3.00. Guajardo's, 8713 Shaver, El Paso, Texas 79925.

FOSSIL SHARK TEETH! \$1.00 each, 4- \$3.00. Williams, P.O. Box 15156, Plantation, Florida 33318.

HELP! Want automobile catalogs from old automobile shows, we pay well. Catalogs, Box 11, Babylon, New York 11702.

GENUINE Indian Jewelry. Wholesale! Details \$1.00 (refundable) Lange/PM, 6031 North 7th Street, Phoenix, AZ 85014.

MODELS—CARS, SHIPS, TRAINS, PLANES, ETC.

RADIO Control models. Big discount Catalog \$2.00. Modelers Supply, Box 7185, Montgomery, Alabama 36107.

SHIP Model Kits, Plans. Fittings from our own Workshop. Big Illustrated Catalog: \$1.00. Bluejacket Shipcrafters, 145-V Water Street South, Norwalk, Conn. 06854.

MODEL Airplanes—Big 220 Page Catalog \$1.50. Sig Company, Montezuma, Iowa 50171.

LIVE Steam powered backyard railroad! All sizes. Complete "bolt-together" kits, and rough castings. Excellent drawings. 100 page catalog \$2.00. Little Engines, Lomita, California 90717.

SHIP And Airplane model kits catalog 25¢. Scientific, Inc., 340 Snyder, Berkeley Heights, N.J. 07922

"SHIP And Yacht model fittings: Pine construction hull kits; blueprints. Send \$1.00 for illustrated catalog. A.J. Fisher, Inc., 1002 Etowah Avenue, Royal Oak, Michigan 48067."

SHIP Model Kits, fittings, plans, books, tools, engines, motors. Free—new 1976 illustrated catalog. James Bliss & Co., Dept. SM, Route 128, Dedham, Mass. 02026.

GAMES, TOYS, PUZZLES, NOVELTIES

MINIATURE Charms. Wholesale Price List 25¢. Treasure Chest, 9321 Capeview Avenue, Norfolk, Virginia 23503.

MAGIC TRICKS, JOKES, VENTRILOQUISM

FREE! Catalog of Magic Tricks and Books, Mickey's Magicland, 606 Fifth Avenue, Brooklyn, N.Y. 11215.

MAGIC! New 1976 Catalog, 35¢. Mystify, Entertain. Best tricks for amateurs and professionals. One of country's oldest dealers. Jeffries Magicland, Box 274-A, Dallas, Texas 75221.

PROFESSIONAL MAGIC! Direct From Factory To You. Giant Catalog—\$1.00. Refundable With First Order. Hank Lee's Magic Factory, 24 Lincoln Street, Dept. PM 3, Boston, Massachusetts 02111.

WOW! Magic, jokes. Largest selection. Amaze, mystify friends. Super Giant Catalog 25¢. Abracadabra-MP, Rahway, New Jersey 07065.

FABULOUS MAGIC'S New 1975 Catalog 50¢. Our Specialty Orders Shipped Same Day. No Substitutes. Fabulous Magic, 3319 East Charleston, Las Vegas, Nevada 89104.

VENTRILOQUISM! Information free. **EXCITING FULL COLOR DUMMY CATALOG**—25¢. Maher, Box 420PM, Littleton, Colorado 80120.

TWO! Different Magic Catalogs 25¢. Miami Magic, 9734 Bird Road, Miami 33165.

COMPLETELY Illustrated catalog. 84 pages, 25¢. Manhattan Magic, Box 334-M, N.Y.C. 10011.

WORLD'S Finest professional magic tricks. Joker's Novelties. Giant illustrated catalog 25¢. Top Hat. Evanston, Illinois 60204.

GENII, The International Conjurers' Magazine, P.O. Box 36068M, Los Angeles, Calif. 90036. Monthly Since 1936. Sample \$1.00. 1 year \$10.00. Not sold on newsstands. None free.

FREE! World's leading novelty catalog. 1600 Fun-makers, Jokes, Tricks, Science, Sports, Hobbies, Jewelry, Psychodelia. Johnson-Smith, C-4, Mt. Clemens, Mich. 48043.

BE A Magician! Two booklets explaining 156 tricks plus large professional catalog. \$1.00. Magic, Inc., 5082 Lincoln, Chicago, Illinois 60625.

FREE 1975 Magic Catalog plus gift certificate! Imperial, Box 623-P, Worcester, Massachusetts 01601.

BICENTENNIAL Magic Catalog. 25¢. Conjurers Craft, Box 65-M, New Hyde Park, N.Y. 11040.

YES YOU CAN MASTER "THE SECRETS OF MAGIC". \$2.00 ppd. or 25¢ for free listing of self development books (deductible from first order). Franz Alba, Box 186, Station A, Flushing, New York 11358.

VENTRILOQUISM Guaranteed Course \$5.95 Books, Dummies, Supplies. Catalog 25¢. Rizzy's, 6034 South Pulaski, Chicago 60629.

BOOKS & PUBLICATIONS

PUBLISH your book! Join our successful authors: publicity, advertising, promotion, beautiful books. All subjects invited. Send for free manuscript report and detailed booklet. Carlton Press, Dept. PMB, 84 Fifth Avenue, New York 10011.

NATIONAL Geographic Magazines, 1888-1971, any issue. Buxbaum, Box 465-PM, Wilmington, Delaware 19899.

FREE Book. Prophet Elijah Coming Before Christ. Megiddo Mission, Dept. 63, 481 Thurston Road, Rochester, N.Y. 14619.

CLOCK And watch repairing books, tools, materials. Free catalog. North American, Box 77A0A, Fox River Grove, Illinois 60021.

FREE Unusual Book Catalogs: Acropolis, P. Box 7, West Berlin, NJ 08091.

BOOKS! Over 400 listed! Catalog 25¢. Moderne Merchant, Box 563-PM, Medinah, IL 60157.

1976 EDITION. WINE AND BEERMAKING AT HOME. Completely illustrated. Send \$6.95 To: R. L. Collins, 5423 N.W. 30th Avenue, Miami, Florida 33142.

"SURVIVAL/Military"—Books/Manuals Catalog 50¢. "Survival" Storage Foods By Cases: List 50¢. Ken Hale (K-50), McDonald, Ohio 44437.

OPPORTUNITY Books—Free Catalog! Franklin, R.D.3, Box 305K-0, Somerset, N.J. 08873.

FLEA MARKET SHOPPERS—Know its value before buying! Complete 320 page guide to flea market shopping. Send \$4.95. Story House, 181 Nesbit Terrace, Irvington, New Jersey 07111.

AMAZING BOOK VALUES . . . 20¢ up . . . Free Lists . . . Send Self-addressed stamped envelope . . . Namco, Box 15301M, Plantation, Florida 33318.

SMOKING, Quit, Right now, Best method, Safe, \$2.00. Sales, Dept. DA2, P.O. Box 1251, Pomona, California 91769.

VETERINARY Guide. The only book of its kind. New and revised edition. Send \$9.95 to: **POPULAR MECHANICS**, Dept V6, Box 1014, Radio City, New York, N.Y. 10019.

PLAYS, SONGS, MANUSCRIPTS

SONGPOEMS! SONGS! Urgently Needed, 50-50 Agreement. Betty's Music Makers, 10355B Paradise Blvd. Treasure Island, Florida 33706.

LYRICS-POEMS Wanted for musical setting, recording. Promotion available on selected songs. Fabulous \$1,000.00 Offer. Monthly Awards. Talent, 17 (PM) Longwood, Quincy, Mass. 02169.

STOP! Did you Know Anyone can STEAL your Songs, Poems, Books? Unless Protected by Law. Simple, Easy. Send \$2.00 to: Music Man Enterprises, Box 598, Lilington, Georgia 30058.

SONGWRITERS LOOKING for CO-WRITERS on 50-50 basis. HAS songs recorded by BREKKA LEE, EDDY ARNOLD, and others. SEND lyrics to: NASHVILLE CO-WRITER PLAN, BOX 1152, NASHVILLE, TENNESSEE 37202.

WANT Your book published? Learn how we publish, advertise, promote, distribute. All subjects. Free booklet PM. Vantage, 516 W. 34th Street, New York City.

BUSINESS SERVICES

OPPORTUNITY Seeker names on gummed labels \$2.00 per 100. M.O.E., Box 296, Constantine, Mich. 49042.

ASIA Directory. World Products Information. Both for \$1.00. World Trade Inquiries, Box 6224, Spokane, Wa. 99207.

SAVE 40-50% on monthly electric bills! Electric expert explains booklet details. Guaranteed results \$2.98. Globe, Box 814-PM, Macon, Georgia 31202.

ZERO CASH BUSINESSES! COSIGNERS! 100% FINANCING! BGS International-1, 210 Fifth Avenue, New York, N.Y. 10010.

OIL Lands, Government Land Lease Drawing. \$10.00 Filing, Brings Oil Royalties. Information: L. G. Filing, Box 98, N. Baldwin Station, Baldwin, N.Y. 11510.

PROFITS FROM CLASSIFIED ADVERTISING! Booklet shows you how to start your own business with Classified Advertising. Only \$1.00 (Refundable with first order). H. E. KAPPEL, POPULAR MECHANICS, DEPT. P. 224 WEST 57TH STREET, NEW YORK, N. Y. 10019.

BUSINESS OPPORTUNITIES

IMPORT-Export opportunity, profitable world-wide, mail order business from home, without capital or travel abroad. We ship plan for no risk examination. Experience unnecessary. Free report. Mellinger, Dept. C2702, Woodland Hills, California 91364.

FREE 100-Page Catalog waiting to bring you Big spare-time cash commissions. Sell Advertising Book Matches. Every business a prospect . . . complete selling instructions furnished. Steady, repeat business. Dept. MX-276, Superior Match Company, 7530 South Greenwood Avenue, Chicago, Illinois 60619.

BIG HOME PROFITS! Your own addressing, mailing business; new, exclusive instructions shows how: Free details; Morgan Enterprises, 144-30P2, 78th Road, Flushing, New York 11367.

PROFITS Galore On hundreds of gift items. \$1.00 refundable investment brings color catalog and dealership. Sweetheart House, 34 Martin, Holyoke, Mass. 01040.

INSTALL burglar alarms without previous experience or costly equipment. Big profit. Free details. Nasco, Dept. C2702, Woodland Hills, California 91364.

\$40 HOUR Profit—proven! Big demand for NEW Porcelain China Baby Bootie Keepsakes. Fantastic profits! 15¢ material produces \$9.00 Booties! Send 25¢ for detailed information. KOS, Box 36414BB-Los Angeles, Calif. 90036.

365 FAST, Easy ways to make money! Free! Rush name, address, zip. Perry 13263-F Ventura Blvd. Studio City, Calif. 91604.

SECRETS! Mail Order Success. Internationally famous expert reveals how to make home business fortunes. Beginners: Get free report "Make Money By Mail." Discloses free advertising, profitable products. Mallico, Dept. C2702, Woodland Hills, California 91364.

PREPARE Tax Returns—Policeman Albert Myers made \$2000 his very first season. Train at home. VA Approved. National Tax School, Monsey, 28G, N.Y. 10952.

YOUR OWN WHOLESALE BUSINESS. Make Big Profits on 1000 and more best-selling products. Giant catalog and details \$2.00 (refundable). Worldwide, Dept. 209, 3103 Hill St., New Smyrna, Fla. 32069.

ABANDONED INDUSTRIAL SILVER—Yours for taking! \$24,000 yearly possible. Free information: Silverman B-13, Box 548, Woodville, Texas 75979.

\$300-\$700 MONTHLY. Raise Rabbits, Laboratory animals for us. We supply Equipment, Breeders, Instructions. Financing Arrangements. Details 25¢. MP 11 Laboratory Animals, Inc. (formerly Rabbits Of Michigan) Countyline Road, Pentwater, MI 49449.

GENERAL STORE (C1572) with gas pumps, beer take out, Dickinson County, Upper Mich. Nice 2 bedroom living quarters, fireplace, sauna too. Caters to fishermen, hunters, campers, snowmobilers. Fixtures, equipment included for \$39,900. Terms. Call or write for free brochures. State Wide Wis-Mich Real Estate, Inc., 2719-A 10th St., Menominee, Mich. 49858. 906-863-2631.

\$551,000 WEEK \$\$\$ POSSIBLE!! RUSH \$3.00 TO: J. MILLER, DEPT. 5201, 1028 HARRISON AVE., ASTORIA, ORE. 97103.

OWN Your own wholesale business, **FANTASTIC PROFITS** on 1000 different items. Free Details. John Colson, 178 Longview Drive, W. Webster, New York 14580.

FM RADIO Station. Start your own. \$3.00. Concept, Box 106, Lawrence, N.Y. 11559.

FREE Jewelry Sales Kit. Make 233% Profit. Courtesy Gems, 1634 Bogart, Bronx, N.Y. 10462.

MAKE \$7.50 to \$15.00 hourly building portable custom cases in your home. Huge demand. Get orders by mail. We supply materials, instructions—everything. Free details. Custom Case, 6075 De Soto, Dept. 20-38, Woodland Hills, CA 91365.

PROPRIETORSHIP Partnership-Corporation Which is right for your new business and how to go about forming it. \$5.00. ISSCO, Box 4009, Irving, Texas 75061.

MAILORDER—Establish own business. Everything supplied—catalogs, ads, mailing lists, Merchandise dropshipped. Gift-Guide, 5818 Venice, Dept. 464, Los Angeles 90019.

PHOTOSTAMP Agents Wanted. Make big money from home mailorder. Hundreds doing it! Free samples & details: Postermatic, Dept. C-7, East Providence, R.I. 02914.

EARN Money Raising Fishworms for us. Write Oakhaven-38, Cedar Hill, Texas 75104.

LET Me show you how you can have your own Rubber Stamp business Free! Write: Roberts, Room RC-2-FC, 1512 Jarvis, Chicago, Ill. 60626.

(Continued on next page)

BUSINESS OPPORTUNITIES (Continued from preceding page)

PIANO Tuning Learned Quickly at Home! Musical knowledge unnecessary. Free information. Empire School, Box 450327, Miami, Florida 33145.

BARGAIN MAILORDER LIBRARY. Professional secrets revealed, free details (Moneyback Guarantee), Susli, pmab, 4318 Palmetto Avenue, Philadelphia, Pa. 19124.

MAILORDER—Nationally known **MILLIONAIRE** will teach you personally. Write for informative book, gift catalog, and complete details. **EVERYTHING FREE!** No obligation. Mail Order Associates, Dept. 22, Montvale, NJ 07645.

MILLIONAIRE'S SECRET FORMULAS Free details. Learn how Millionaires make money fast. Writer: Hall, 6111 Gulf Freeway, Box 26553, Houston, Texas 77207.

BECOME Our Mail Order dealer with \$35 investment. Details: Burnes, Box 499, Glen Ellyn, Illinois 60137.

IMPORT-MAILORDER OPPORTUNITY. One year risk free trial basis. Earn \$15,000+ Annually or owe nothing. Details, Northeast Imports, Box 121M, Fremont, NH 03044.

\$500 MONTHLY Clipping items from your newspaper. Experience unnecessary. Free details. Send stamped envelope. Bill Derry Enterprises, P.O.B. 238, Kew Gardens, N.Y. 11415.

\$100,000 YEARLY Possible! Your Own Business. Free information. CDC/10-026A, POB 11066, Tucson, Arizona 85734.

HOME Business. Make Plastic Signs. Big Profits. Universal, Lenora, Kansas 67645.

PIANO Tuning quickly learned with home study course. Diploma granted. American Tuning School, 17050 Telfer Dr., Morgan Hill, Calif. 95037.

NEW Copyrighted Home Business Addressing Envelopes. Fantastic Profits. Send Self Addressed Stamped Envelope. Mantor House, Dept 8PM, Minoa, N.Y. 13116.

ESTABLISH Successful Mailorder Business. Immediate, Continuous Income! Mears, 05363 Essex, Alexandria, Virginia 22311.

BECOME Our Mail Order Distributor with \$150 investment. Free Brochure. Audit Controls, 40 Brookside Ave., Fair Lawn, New Jersey 07410.

TAKE Catalog Orders. We drop-ship 1001 best-selling specialty products. Lowest below-wholesale prices. Immediate delivery. Spectacular home business opportunity. Free Book, SMC, 6061 De Soto Ave., Dept. 20-38, Woodland Hills, CA 91365.

\$200.00 SPARE Time earnings with your Tablesaw. Write: Workshop Five, 3800 Harney, Vancouver, Washington 98660.

VENDING Machines. No selling. Routes earn amazing profits. Big catalogue free. Parkway Machine Corporation, 1930MB Greenspring Drive, Timonium, Maryland 21093.

\$1.00 LISTS You year sent to 1000 Importers, Jobbers, Mailers, our mailing year. Dixie, King, North Carolina 27021.

BECOME "Mortgage Broker." Lucrative! Capital Sources. Box 640099, Uleta, Florida 33164.

FREE COLLECTION AGENCY Details!! \$1000.00 Monthly Possible. Master-PM, Dawsonville, Georgia 30534.

HOW TO RAISE \$100.00 to \$1,000,000.00! Write: Capital-PM, Dawsonville, Georgia 30534.

I MADE \$40,000.00 Year by Mailorder! Helped others make money! Free Proof! Torrey, Box 318VY, Ypsilanti, Michigan 48197.

MAIL Baby Catalogs to New Mothers for Big Profits! Details 25¢. Volz-PM, Ypsilanti, Michigan 48197.

\$200 WEEKLY! Make, Sell Bricks! Free Information! Xolto Bricks, 5715 N. Mozart, Chicago, Ill. 60659.

FREE WEALTH BOOK: "2100 Unique Ways To Make Money!" World's Biggest Collection of Home Businesses!! Success-M, 26903 West Eight Mile, Detroit, Michigan 48240.

WORLD'S Largest Supply. 25% to 40% under wholesale. Closeouts. HONG KONG Clothes. Automobiles. Electronics. Free Details. International Buyers, Box 16386MM, Portland, Oregon. 97233.

REPAIR Hydraulic Jacks—Details Free. Write: Hydraulic Parts Supply, Box 4157, Brownsville, Texas 78520.

YOUR Own Mailorder Catalog Business. No Merchandise Investment, Details Free. A.M. Sales, 31-14 94 St., East Elmhurst, NY 11369.

FREE MAILORDER Report! Plan Guarantees Beginners \$50.00 per order - to \$750 Weekly! Professionals, Box 21093-E, Seattle, WA. 98111.

EARN \$60.00 Daily manufacturing Concrete Fence Posts. Practically no investment. Send stamped-addressed envelope. American, Excelsior Springs, Mo. 64024.

\$178.00 WEEKLY. Work one hour daily. Guaranteed, FAS, Box 13703-J, San Antonio, Texas, 78213.

MAILORDER Millionaire helps beginners make \$500 weekly. Free report reveals secret plan! Executive (IA2), 333 North Michigan, Chicago 60601.

\$70 TO \$200 WEEKLY—Home, Spare Time Simplified Mail Bookkeeping. Immediate Income. Easy. Auditax, Box 34741A, Los Angeles, Calif. 90034.

184 POPULAR MECHANICS

\$400.00 MONTHLY Raising giant fishworms. Soilless method. Charlie Morgan, Bushnell, Florida 33513.

MAKE \$92.00 FROM Square Foot Plywood (Jigsaw or Bandsaw necessary). (Proof), details 25¢. (Refundable). Woodart, Bridgewater, Mass. 02324.

CALIFORNIA MANUFACTURER NEEDS MAN to assemble our product and be local agent, experience unnecessary. May start while presently employed. Five-figure income for responsible applicant. S.K.R.M. Manufacturers, 911 N. Lagoon Ave., Wilmington, Ca. 90744.

PROFITS FROM CLASSIFIED ADVERTISING! Booklet shows you how to start your own business with Classified Advertising. Only \$1.00 (Refundable with first order.) H. E. KAPPEL, POPULAR MECHANICS, DEPT. P, 224 WEST 57TH STREET, NEW YORK, N. Y. 10019.

BLOCK Machines, Posts, Mold Catalog \$3.00 refundable. Carlayne, Route One, Box 95, Rapid City, South Dakota 57701.

VINYL'S WHERE THE MONEY IS! Invisibly repair, refinish, recolor furniture, luggage, car tops. Quick, easy. Two small \$20.00 jobs a day earn you \$1,000 a month. Homes, cars, offices, restaurants, unlimited customers. Start earning after a day's practice. Sensational details Free. VIP, 2007 Montrose, Chicago 60618.

SELL Books by mail. Complete dealer set-up—25¢. Midwest, Box 44R2-PM, Shawano, Wisconsin 54166.

\$500 WEEKLY At Home—New "Guaranteed Daily Income" plans—Free Report, Box 90133PM, Atlanta, Georgia 30344.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send Stamped addressed envelope, Cedar Enterprises, Box 46, Nashua, Iowa 50658.

FREE SECRET BOOK "2042 Unique, proven enterprises". Fabulous "Little Knowns" Work home! Haylings, Carlsbad, Calif. 92008.

MAILORDER Beginners—Get All information to succeed! Adams (602), 12128 West 70th, Arvada, Colorado 80004.

AMAZING Mail-order profits selling books and information! Free details. Valsaco, Box 268L, Eckert, Colorado 81418.

HIGH PROFIT BUSINESSES. 35¢ Guaranteed. MONEY-ZI, 232 Front, Napoleon, Ohio 43545.

\$2,000 + Monthly! Selling Information; Mailorder highest profits! Free proof: Expansions, Box 746, Rouses Point, N.Y. 12979.

100% PROFIT Bronzing Baby Shoes. **FREE LITERATURE.** NBC-PM, Gower, Missouri 64454.

MAIL Baby Catalogs to New Mothers. Big Profits! Details 25¢. Stovers, Box 23592-PM, Tampa, Florida 33623.

FREE Catalog! Learn Mailorder, Books, Magazines, New Products, Mailing Lists, Wholesale-Dropship Directories. National Mailers Exchange, Box 1355-PM, Sioux Falls, South Dakota 57101.

\$231.00 EXTRA Weekly Playing Mail Order "Money Game"! Details—Business, 2205-J Robinhood, Albany, Georgia 31707.

SELL SENSATIONAL LOW-COST BURGLAR ALARM. Lightening seller. Exceptional margin. Samples for trial. Northwest Electric, Ave. 204, Mitchell, S.D. 57301.

BIG Money-making Plaque. Details 50¢. Carver, PM, Route 1, Dawsonville, Ga. 30534.

PORTABLE Sandblaster \$29.95. Distributor wanted. Free brochure. Inka, Box 66573-A, Houston, Texas 77006.

\$10 DAILY Writing short articles at home. Begin immediately! Copyrighted report reveals how and where. Send \$1.50. E & D, 3816 Emerald Drive, Dept. PM2, Ames, Iowa 50010.

WATCH REPAIRING. For cash income or hobby. Free sample home study lesson. Chicago School of Watchmaking, YBA, Fox River Grove, Illinois 60021.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send stamped addressed envelope; LORDE ENTERPRISES, Box 4726 PM Panorama City, California 91412.

SAVE THOUSANDS! Have an expert analysis of your proposed business. Send for 20 page questionnaire today, return promptly for expert analysis. Total cost \$15.00 sent with initial request. Woodland Investments, Box 168M, Cheshire, CT 06410. Connecticut Residents Add 7%.

MAKE 250%. Profit. Giftware, Novelties, Jewelry, Toys, Houseware, 1000 others. Giant wholesale Catalog \$2.00. Refundable. Colonial Import, Box 405A, Boston, Mass. 02199.

STUFF ENVELOPES \$500/Thousand Immediately, Free Supplies. Rush Stamped, Addressed Envelope. RS-Industries, P.O. Box 2128PM, Santa Clara, Calif. 95051.

GET Started in mailorder without inventory. U.S. drop ship suppliers directory, \$3.00. Hamernick, 71 Strawberry Hill Avenue, Stamford, Conn. 06902.

\$500.00 WEEK. Your Own business at home. But not for everyone. Find out if you have what it takes. Free new report, "Success Now". Secrets from people who have become millionaires in mailorder. Clipper Industries, Box 10361M, Kansas City, Missouri 64111.

\$250-\$500/THOUSAND STUFFING ENVELOPES, COMPLETE ASSISTANCE. Rush Stamped Addressed Envelope. Kawaii-R2 Box RR2 El Cerrito California 94530

BARGAINS! Buy Wholesale and Below! Name Brands. Appliances... Furniture... Sports Equipment... Televisions... Cameras... Watches... Jewelry... Thousands More. Huge Discounts to \$1,000.00 on New Automobiles. All Makes. Free Details. Worldwide Bargainhunters, Box 730-AA, Holland, Michigan 49423.

\$200.00 DAILY In Your Mailbox! Opportunity To Follow Mailorder Experts. Free Details. Associates, Box 136-A, Holland, Mich. 49423.

FREE LITERATURE! Mail Baby Catalogs to New Mothers. Make extra money. PATT-MAR, Box 5358, Fort Wayne, IN 46805.

MAKE \$8.00 Every \$10.00. Details—B.E. & Sons, 461 W. Ave. 44, Los Angeles, CA 90065.

1000+ PROVEN MONEY MAKERS! Unique Unknowns!! Work Home! Free list. Better Living Publications-A2, Ridgeway, Ohio 43345.

WANTED Dealers! Fire Alarms Wholesale. Patty's, Box 3435-PMO, Kent, Washington 98031.

\$100 DAILY Selling information By Mail. National Reports, Box 276, LPO6, Niagara Falls, New York 14304.

MAKE MONEY!! Home Business. Easy when you know how. Free details. C. Scott, 8701 NE 58 St., Vancouver, Washington 98662.

\$500 MONTHLY. Immediate income. Stuff envelopes at home, information, send self-addressed stamped envelope. Cottage, Box 25053-BAB, Los Angeles, CA 90025.

BIG PROFITS FROM YOUR PHONE! \$1,000 Weekly. Possible. Details free. Newt, Ethridge, Tennessee 38456.

SELL TO STAMP COLLECTORS BY MAIL. 500% mark-up possible. Pleasant, profitable, low capital. Prior knowledge unnecessary. Successful businessman tells how. JGS, Inc., Dept. B-65, Box 525, Merrifield, Va. 22116.

POOR MAN'S CATALOG! U-build Engraving Machines, Power Tools, Unusual Opportunities! 25¢. Economy Enterprises, Box 23-P, Highland, Maryland 20777.

COMPLETE Mail Order Business, \$1.00 Plus 2 Stamps, Cannon Enterprises, (PM-2), Morgantown, Kentucky 42261.

START Your Own Correspondence School. Pioneer Schools, 550 B, S. Citrus, Covina, CA 91723.

HOW To use Phenomenal Secret of Multiplication. Be your own person. Multiply your income time and again. Start today. Send \$2.00. Institute of Creative Living, Box 14195-G, Oklahoma City, Okla. 73114.

\$200+ WEEKLY. Sell Books by Mail. Free Details. Barclay Company—45PB, Hatesite, New York 11743.

BECOME "Coin Dealer"! \$10,000 Yearly Possible! Writer: Box 35122MB, Tulsa 74135.

WORLD'S Leading National Source Magazine \$1.00. International-PM, 2401 Wittick, Lomita, CA. 90717.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send stamped addressed envelope, PS Enterprises, Dept. 82, 36 Woodbine Ave., Northampton, Ma. 01060.

GIGANTIC Profits in your own wholesaling business. No inventory, 1,000 gifts, toys, quality merchandise. Attractive catalog, details—\$2.00. Refunded first order. Specialty Brokers, 520 Grant, North Augusta, S. Car. 29841.

STRIKE IT RICH. New gold laws bring fast riches to weekend prospectors. Complete U.S. Instructions \$2.50. National Laboratories, Box 1089, St. Petersburg, Florida 33731.

U.S. SPONSORS BOOMING Catfish farming. Financing. Proof of thrills-riches. Details 50¢. Catfish Industries, Box 1089, St. Petersburg, Florida 33731.

START Profitable Home Business. Details \$1.00. Four Brothers Co., DPM-2, 3 Suffolk Place, Huntington Sta., N.Y. 11746.

\$250/\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Rush Stamped, Addressed Envelope. AMD, Box 5437, Akron, Ohio 44313.

\$250-\$750/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send Stamped Addressed Envelope, Tri-Mac, Department F-210, Box 34255-A9, Indianapolis, Indiana 46234.

SKYROCKET Your Income!! New Manual Reveals Money-making Principles, Case Histories Successful Mail Campaigns. Like Having Personal Counselor. Avoid Costly Errors! Gain Success. Only \$2.00 postpaid. Mart, Box 443, Cherryville, North Carolina 28021.

CONTROL \$1,000,000 IN REAL ESTATE! Net \$2,000 monthly. No selling. No Capital to start. Unique leverage opportunity. Free Brochure. Kashbuilder, Box 1132-19K, Indianapolis, Indiana 46225.

WANT More Mailorder Profits?? Free Literature Reveals How. Write: Stoneybrook, 186A Main, West Chelmsford, MA 01863.

MAKE \$2,000.00 MONTHLY. Spare time. Unique proven enterprise. No selling. No capital to start. Free brochure. Kashbuilder, Box 1132-19K, Indianapolis, Indiana 46225.

GREATEST Profit Potential in Mailorder!! Achieve Success. Inexpensive. Learn how. Mailbook, 2026B Appleton, Long Beach, Calif. 90803.

SELL BOOKS BY MAIL. Complete Dealer Setup—FREE!! Northeast, 45C Till, Enfield, Connecticut 06082.

BUSINESS OPPORTUNITIES (Continued from preceding page)

COMPLETE Mailorder Jewelry Business. Free Details. Imperial, 621 Tucson, Lexington, Ky. 40503.

AMAZING PROFITS!! Mail Baby Catalogs to New Mothers! Details 25c. Addington's, Box 522AB, Belleville, Michigan 48111.

YOUR Own Business. Free Details. Specialties Merchandiser, P.O. Box 2464, Kalamazoo, Mich. 49003.

GINSENG Seeds For Planting. Over \$6,000 Possible Growing 1/4 Acre. For Information, Price List, Write: Blueridge Ginseng, Rt. 7, Fort Payne, AL 35967.

35 TOP firms will start you in your own business **FREE!** Absolutely no investment! Guaranteed! More details free. Genovese, Box 311-P26, Cairo, N.Y. 12413.

\$500-WEEKLY! Reupholstering—Details \$1.00. (Refundable). Craffex, 2532 Superior, Chicago, Illinois 60612.

MAILORDER Expert exposes "How To Get Rich"! Free details, New secret plan. Aurora Enterprises, Box 18-A, Dodgeville, WI. 53533.

\$250-\$750/THOUSAND STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send Stamped Addressed Envelope. Mars Enterprises, Box 38001 - A2, Washington, D.C. 20020.

CUSTOM FRAMING—PICTURES, PORTRAITS—MAKES \$\$\$! New easy-to-learn method. . . everything you need to know and do to start making money quickly in this pleasant, profitable, fast-growing field. Details **FREE, CREATIVE FRAMECRAFTERS**, 1205 W. Barkley, Dept. BPM2, Box 16, Orange, Ca. 92666.

MAKE 2 to 3 Times your cost on hundreds of products. Gift items, novelties, toys, carded merchandise, 1001 others. \$2.00 brings giant catalog, refundable on first order. J and A's Specialists, Dept. PM 278, 1649 Verona, Pen Argyl, Pa. 18072.

"LAZY WAY" Boys get rich selling books by mail. "Million Dollar Booksellers Portfolio" shows how you can do it too. Details free. Research Council, Box 31-D, Armonk, NY 10504.

COLLECT NAMES. Earn \$300. Per Thousand Possible. Also, 50 Free Dealerships Available. Send 25c And Stamped Addressed Envelope, T. Halliday, Suite 206, 69 Elm St., West, Sudbury, Ontario, Canada P3C 1T4.

\$500 WEEKLY—More—easy! Earn \$20.00-\$30.00 in spare time! Earn big in Invisible Vinyl Repair Business! Dealers/Specialists needed! Repair, refinish, recolor home/office furniture, in restaurants, hotels/motels, cars. Start earning in 48-hours! Free sample Kit/Literature. GTP, 6156PB-Mission Gorge Road, San Diego, Calif. 92120.

GREAT PROFITS selling hundreds of products. \$5.00 brings profit producing package. Money back guarantee. The Henry Co., 205 Lincoln Ave., Meyersdale, Penna. 15552.

\$250-\$500 THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send Stamped Addressed Envelope. Mr. G's, 601 Melton, PM1, Texarkana, Texas 75501.

GET RICH IN MAILORDER—Free Report. Universal, 226-B Myrtle, Scotch Plains, New Jersey 07076.

SELL Yearly Biorhythm Charts for \$10.00 Each. Your Cost 10c Each To Make Photocopy. Complete Kit \$5.00. Mastermind (P.S.), Box 16046, Kansas City, Missouri 64112.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Rush Stamped Addressed Envelope. Railco, 3648 Edenhurst Avenue-A2, Los Angeles, California 90039.

The Original Self Powered Permanent Magnet Motor/Generator That Works. Inflated Wind, Motor Outperforms All. Solar Breakthrough Guaranteed 10 Times Hotter. Build \$3,000.00 Foam Plastic Home—Sell For \$50,000.00. Patents Pending. Drawings, Details \$10.00 Each. All (And More) \$19.00 Refundable. Mastermind, P.M., Box 16046, Kansas City, Missouri 64112.

\$250-\$500 THOUSAND STUFFING ENVELOPES. Complete Assistance, Send Stamped, Addressed Envelope, ROYAL, Box 1028, Department 1018, Bloomington, Illinois 61701.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Send Stamped Addressed Envelope. Opportunity's Knocking, Box 26467-FN, Denver, Colorado 80226.

\$500.00/THOUSAND—Stuffing Envelopes. Begin immediately. Beginner's kit, \$1.00. Guaranteed! Contemporary, Box 1144PM, Forest Park, GA 30050.

\$165.00 WEEKLY Working one hour daily. Guaranteed. Horizon Enterprises, 8050-D South Main, Houston, TX 77025.

\$250-\$500/THOUSAND, STUFFING ENVELOPES, COMPLETE ASSISTANCE. Rush stamped addressed envelope. Rusmar, Box 81, Whitefield, New Hampshire 03598.

300% PROFIT On popular products and gifts. \$2.00 (refundable) brings huge catalog. Dutch Family Wholesale, 811 NW 48th St., Lawton, Oklahoma 73501.

A FORTUNE IN JUNK! LEARN UPHOLSTERY AT HOME TURN CAST-OFFS INTO CHAIRS, SOFAS WORTH \$100's. NO EXPERIENCE NEEDED. WE SHOW YOU HOW EVEN SUPPLY ALL TOOLS AND PRACTICAL FURNITURE KITS! VETERAN APPROVED. BOOKLET MAILED FREE. MODERN UPHOLSTERY INSTITUTE, 1205 W. BARKLEY, DEPT. BPM2, BOX 16, ORANGE, CALIF. 92666.

\$250-\$500/THOUSAND, STUFFING ENVELOPES. Complete Assistance. Send Stamped Addressed Envelope. Miles Enterprise, 2935 Ward Ct., Lakewood, Colo. 80016

SACK-O-GOLD. Need \$50,000 now? Here it is, easy, possible, with our New Sure-Moneymaker Kit. \$12.95. Sales, Dept. AC3, P.O. Box 1251, Pomona, California 91769.

COMPLETE MAIL ORDER COURSE Only \$2.00. Andree's Enrg., P.O. Box 217, Val-d'or, Quebec, Canada J9P-4P3

MAXIMIZE Your Profits!! Realize top profit potential from your business. Establish necessary controls to keep your gains. Inexpensive. Free details, Write: Gedding Associates, 6903B Miranda Drive, Austin, Texas 78752.

MAKE MONEY! Mail order "REAL FORTUNE" Easy. Write: Carraher, North 64, Maple Park, Illinois 60151.

YOUR CATALOG PRINTED AT HUGE SAVINGS. Now as low as 4c for 8-page catalogs; 5 1/2c for 16 pages. Similar savings on larger books. Send camera-ready copy; we ship in 10 days. Get free samples, price list: Dinker & Klein, Box 21188N, Seattle, WA 98111.

\$250-\$500/THOUSAND Stuffing Envelopes, Complete Assistance, Rush Stamped Addressed Envelope, Keystone Enterprises, Box 128, Watkins Glen, New York 14891.

FANTASTIC Profits selling by mail. No investment. Free details. Granac, Box 650624, Miami, Fla. 33165.

SAVE: \$1.00 Sends Your Name To Every Business Opportunities Ad This Issue. Krause Products, 2208 Covert Rd., Burton, Mich. 48509.

BIG PROFITS!! Mail Baby Catalogs to New Mothers. Details 25c. Radco, Box 101B, Depew, New York 14043.

\$500/THOUSAND Possible stuffing envelopes rush stamped, addressed envelope. Richgo, Box 368, Reading, Mass. 01867.

SPARETIME CASH Selling Car Owners "Clip-On" Sun Blockers. Unlimited market near home. Free Details. Visorette, Box 1030PMA, Wickenburg, Arizona 85358.

MAILORDER PROFESSIONAL Reveals Secret Plan to high profit home business. Request free report today! Value House, Box 363FA, New York 10011.

MONEYMAKING OPPORTUNITIES

SPARE TIME CASH. Sell famous Hanover Shoes. Samples, sales kit free. No experience needed. No age limit. Big commissions. Hanover Shoe, Dept. 1531, Hanover, Pa. 17331.

NEED EXTRA INCOME? Sell famous Knapp Cushion Comfort Shoes. Part-time, full-time. Over \$8 million in commissions last year. No investment. Free selling kit. Write: I. Margolis, 612 Knapp Centre, Brockton, Mass. 02401.

GAMBLERS—Free! Win lifetime income from dice, roulette, thoroughbred, harness, dog racing. Guaranteed! Research, Box 551 PM2, Mineola, NY 11501.

\$128.00 IN SALES From \$12.00 Material. Details \$1.00 (refundable). Webber, Box 241, Sun Prairie, WI 53590.

MONEY Sources—Grants and loans from 371 organizations. Directory and complete instructions \$2.00. Globe Reports, Box 20588-PM, St. Louis, Missouri 63139.

\$10 DAILY Writing short articles at home. Begin immediately! copy-written report reveals how and where. Send \$1.50 To Logan Enterprises, 11 Utne Court, Lincoln Park, New Jersey 07035-Dept. 2PM.

EXCITING! FANTASTIC! Make money helping others! \$3.00. DATAco, Box 2343-A, Scottsdale, AZ 85252.

\$750/THOUSAND, STUFFING ENVELOPES, FREE SUPPLIES. write: Jem Agency, Box 1626-M1, Orange, California 92668.

FOREIGN Trade Profit Opportunities. Write for free report. Globe Reports, Box 20588-PM, St. Louis, Missouri 63139.

CARVE Your own signs with patented **GUIDE-ALL** Router attachment \$25.00. Templates \$16.00 up. Free brochure. Rustic Shop, 7431 Artesia St., Buena Park, Calif. 90621.

EXTRA MONEY! SELL "PERSONALIZED" SOCIAL SECURITY PLATES! FREE SALES KIT! KERN, 246PF RICHMOND, N. MASSAQUEUA, NEW YORK 11758.

\$250-\$500 THOUSAND STUFFING ENVELOPES COMPLETE ASSISTANCE. Rush Stamped Addressed Envelope. Opportunities SWS, Box 975-1A2, Canyon, Tex. 79015.

\$1,000 MONTHLY! Stuffing Envelopes and Clipping Newspapers: Send Stamped Addressed Envelope . . . McGuire, Box 144, Tacoma, Wash. 98412.

HOW To Make Money writing short paragraphs. Information Free. Barrett, Dept. C-27-K, 6216 N. Clark, Chicago 60660.

NEW Copyrighted Home Business Addressing Envelopes. Fantastic Profits. Send Self Addressed Stamped Envelope. Mantor House, Dept. BPM, Minoa, N.Y. 13116.

VENDING Machines. No selling. Routes earn amazing profits. Big catalogue free. Parkway Machine Corporation. 1930PMM Greenspring Drive, Timonium, Maryland 21093.

MAKE Statuettes, novelties, imitation marble. Sell to stores or start gift shop. Free details. Marbleizing, 41 Waverton, St. Louis, Mo. 63124.

\$175.00 WEEKLY Correcting Pupils' Lessons! Samples. \$1.00! Castle's, 507-LP Fifth, NYC 10017.

LEARN The secrets of repairing junk batteries. "Fabulous Profits" at home. Apex Engineering, 3100

GET World's Biggest Wholesale Import Catalog. Write: World, Medina, Washington 98039.

FREE WEALTH BOOK: "2100 Unique Ways To Make Money!!" World's Biggest Collection of Home Businesses!! Success-M, 26903 West Eight Mile, Detroit, Michigan 48240.

\$1,000 MONTHLY!! Stuffing Envelopes and Clipping Newspapers: Send Stamped Addressed Envelope . . . JOY, Box 936-C, Hyattsville, Maryland 20783.

\$200.00 PROFIT. Sheet 1/4" plywood. Details 50c. Novelties, 610 So. 24th, Elwood, Indiana 46036.

\$8,000 MONTHLY SPARE TIME! No Selling! Start Now! —Free Proof!!—Dwco, Box 665-A, Inglewood, Ca. 90307.

GET RICH With secret law that smashes debts and brings you \$500 to \$2 million cash. Free Report! Credit (6A2), 333 North Michigan, Chicago 60601.

PROFITS FROM CLASSIFIED ADVERTISING! Booklet shows you how to start your own business with Classified Advertising. Only \$1.00 (Refundable with first order.) H. E. KAPPEL, POPULAR MECHANICS, DEPT. P, 224 WEST 57TH STREET, NEW YORK, N. Y. 10019.

VINYL'S Where The Money Is! Invisibly repair, re-finish, recolor furniture, luggage, car tops. Quick, easy. Two small \$20.00 jobs a day earn you \$1,000 a month. Homes, cars, offices, restaurants, unlimited customers. Start earning after a day's practice. Sensational details Free. VIP, 2062 Montrose, Chicago 60618.

STUFF Envelopes. \$25.00 hundred. Free supplies. Send stamped envelope. Isco, 3835M 42nd, San Diego, CA 92105.

\$350 DAILY in your mailbox—Free Report reveals fortune building secrets—Research, Box 90133PM, Atlanta, Georgia 30344.

FREE SECRET BOOK "2042 Unique, proven enterprises". Fabulous "Little Knowns" Work home! Haylings, Carlsbad, Calif. 92008.

\$6,000.00-\$12,000.00 Raising Rabbits. 400,000 Books Sold. Free Details. Vidikapa, Box 1543-A9, Tampa, Fla. 33601.

SAVE—Send \$2.00 for ANALYSIS DETAILING COSTS AND POTENTIAL of most ventures advertised in these columns. Opportunity consultants, 16568 Palm Ave., Anderson, CA. 96007.

GO Wild with delight! Dynamic new Report reveals, "How To Build An Instant Fortune!" Proven secret-first time told! Guaranteed. No effort, expense, risk! Details free. Nubrenetics, Box 2201PM2, Ft. Myers, Fla. 33902.

NEW! Home Business Report. Many ideas for **EXTRA INCOME.** Satisfaction Guaranteed. Contact: Communique, Route 3, Box 279, Dept. PM, Gaston, OR 97119.

SELL SENSATIONAL LOW-COST BURGLAR ALARM. Exceptional margin. Samples for trial. Northwest Electric, Ave. 204, Mitchell, S.D. 57301.

HOW To Earn At Home Addressing Envelopes. Rush Stamped/Addressed Envelope. Taut, Box 90697E3, Atlanta, Georgia 30344.

JUNK CAR BONANZA—Discovered High Income for individuals. No investment. Thousands monthly. Complete independence working part-time. Send \$2.00 for Manual. Start making Big Money at once. Wilserve, Dept. H, 5050 Poplar, Suite 1721, Memphis, Tenn. 38157.

WE BUY NEWSPAPER CLIPPINGS of Wedding Announcements for \$1.00 each. Instructions. \$1.00. Clippings, Box 741 PM, Gatesville, Texas 76528.

NEVER Won Anything? Anyone can win Sweepstakes contests! Free details. Services, Box 644-PCB, Des Moines, Iowa 50303.

START Immediately—Receive 100 letters a day, each containing \$1.00. Details, Rush \$1.00. Reichow, Box 37, Big-Flats, New York 14814.

MAIL Letters featuring real merchandise. Get \$12.00 orders in every mail, \$8.00 profit. Details 25c. Molesworth, The Dalles, Oregon 97058.

ENGRAVING, Trophies, Profit Crafts \$20. Hour or more. Free Catalogue. Skill-Craft, P.O. Box 132010-PM, Columbus, Ohio 43213.

BEAT INFLATION! Make money at home clipping newspaper items. Free details! Banner, Box 6724, Glendale, California 91205.

\$250-\$750/THOUSAND, Stuffing Envelopes, Complete Assistance. Send Stamped Addressed Envelope. Tri-Mac, Dept. S-195, Box 34255, Indpls., Ind. 46234.

SELL Your photos. Report tells how and where. Only \$1.00. Tokumi, 2361 East Manoa Road, Honolulu, Hawaii 96822.

SIMPLE, Pleasant Mailorder. 400% profit—proven promotions. Dealers Kit \$1.00 (refundable). Progressive, Box 23606B, San Jose, CA 95153.

HOW TO WRITE Magazine Articles. Inquire: Goliath, Box 1073, Arlington Heights, Illinois 60005.

IF YOU HAVE AN IDEA FOR A NEW PRODUCT . . . or a way to make an old product better, send for important information on Protecting, Developing, Marketing your inventions/ideas for Cash/Royalty sales. Professional, fee-based invention service company. Request **FREE INVENTORS KIT NO. A-85.** Raymond Lee Organization, 230 Park Avenue North, New York City 10017.

\$200-\$500/THOUSAND STUFFING ENVELOPES. Complete Assistance, Rush Stamped Addressed Envelope, Royal Enterprises, Box 4663-D1, Portland, Oregon 97208.

(Continued on next page)

MONEYMAKING OPPORTUNITIES

(Continued from preceding page)

FREE—Easy Ways to make money selling exciting new products—Full spare time. Send name, age for 5 months free subscription. Salesman's Opportunity Magazine, 1460 Hancock Center, Dept. 577, Chicago 60611.

\$500/THOUSAND, Stuffing Envelopes. Complete Assistance. Rush Stamped Addressed Envelope, Pacific Associates, Box 27185-C2, Honolulu, Hawaii 96827.

RECEIVE \$100.00 daily. Plans, 100 formulas, rush \$6.99. Palmer, Box 1244-PM, Phenix City, Alabama 36867.

DOUBLE Or TRIPLE your cash in 30 days. Guaranteed! Free Report reveals secret system! Amex, 216 Jackson, 612-2PM, Chicago 60606.

START PROFITABLE Business at home! Free details. J. P. Hall, 7305 Bay Street, St. Petersburg Bch, FL 33706.

FABULOUS Opportunity! Earn money at home stuffing mailing in pre-addressed, stamped envelopes, furnished free. PM, Box 7282, Akron, Ohio 44306.

"SMALL INVESTORS, How Can They Make Money in Bullion?" Free! Stagecoach, 1124 NW 40 Ave., Gainesville, Fla. 32601.

HOW TO SAVE MONEY When buying a house or land. New fact book. Sixty-Nine pages of detailed instructions cover decision to buy, signing agreement, borrowing money, and more. Send \$2.98. Money-back Guarantee. G. Enterprises, P.O. Box 57, Westville, Illinois 61883.

PROFITABLE Business At Home. Ask About Details. Frye, Box 65PM2, Royalston, Mass. 01368.

AMAZINGLY EASY!! WRITE FOR PROFIT! DYNAMIC NEW COURSE sent post-paid with Ten Day Money Back Guarantee. Only \$5.75 to AUTHORS, 370 South Main, Box 895, Pendleton, Oregon 97801.

MAKE 2 to 3 times your cost on hundreds of products. For more information write—Northeast Products Co., Dept. 69C-3PM1, Union, Maine 04862.

HOW to make money writing short articles. Copyrighted report tells how and what to write, where to sell. Moneyback Guarantee. Send \$1.50. Donald Gear, Box 444, Elkins, WV 26241.

\$250/THOUSAND Stuffing Envelopes, free supplies. Rush Stamped addressed Envelope. Box 527, Maplewood, N.J. 07040.

PROFITABLE Extra business casting decorative plaster statues and plaques. Send \$4.95 for catalog and detailed instructions. ZENE DECORATIVES, P.O. Box 238, Joliet, Montana 59041.

INVESTORS Wanted! 100% Interest Paid! Details 25¢. International, Box 567, Ponfotoc, Ms. 38663.

\$250-\$500 THOUSAND STUFFING ENVELOPES. COMPLETE ASSISTANCE, Rush Stamped, Addressed Envelope, Jade, Box 227-P2, Howard Beach, New York 11414.

RETIREMENT INCOME! Collect coins for investment and profit. Start now. Booklet tells how. Satisfaction guaranteed. Send \$1.00. Rollin Miller Company, CPM6B; 561-D Oakdale Road, Newark, Delaware 19713.

\$500.00 MONTHLY . . . Mailing our sales circulars . . . everything supplied. Write: Enterprise, Box 1296-MT, Newport News, Virginia 23601.

GET Rich by mail. Inexpensive books, guides. Catalog 25¢. Webber, Box 106, Madison, Wisconsin 53704.

MAKE Money with your ideas. Turn your ideas into cash. Booklet shows how anyone can do it. Only \$1.50. Sako-e, Box 545, Dearborn, Mich. 48121.

MONEY Clipping Newspaper Items! \$2.00—\$10.00 each! Free Details! Wesco, P.O. Box 891A9, Michigan City, IN 46360.

CASH! Money. Big Earnings! Details. 25¢ and Stamped Addressed Envelope. Details. 2630 Hampden, Baltimore, Md. 21211.

MAILORDER Success!! Start Your Success Now!! Details Free! Dominik, 3747 Crestwood, Erie, Pa. 16510.

EXTRA MONEY!! \$500/thousand, stuff envelopes. Details—rush 25¢, stamped, addressed envelope. EMO Enterprises, 1003 Kochenderfer Road, Lebanon, Pa. 17042.

MONEYBOOK. "Reflections on Money, Wealth and Financial Security". Send \$2.00 air mail. Editorial Texto, Apartado 2988, San Jose, Costa Rica.

WOODWORKERS—Earn \$10.00 per hour Constructing Projects for Craft and Consignment Shops. Guaranteed Instructions describe Projects and Selling Methods. \$3.00. Woodcraft Ideas, Box 193, New Middletown, Ohio 44442.

\$500/THOUSAND POSSIBLE STUFFING ENVELOPES. INFORMATION/SUPPLIES FREE!! Stamped, Addressed Envelope, Smith Enterprises, 269, Green, Minn. 55740.

RECEIVE Guaranteed \$1250/1000 envelopes forwarded! Complete setup, \$3.00: Cooperative, 891PM, Westview, Binghamton, N.Y. 13905.

AMAZINGLY PROFITABLE. Selected Home Money Making Opportunities. Literature Free. Executive Towers, 8050 S. Main, Houston, Texas 77025.

UNLIMITED Home Earnings. Stuffing Envelopes!! Information, Rush Stamped Addressed Envelope. Services, 271RTM1, Owego, New York 13827.

ASSEMBLE Your own MAIL ORDER Instruction books! Catalogs. 10¢. Cazin, 526 Maple, Redwood City, CA 94063.

BUILD A fortune quickly. Proven Secrets Not available before. No risk. Start at home part time. FREE details. Clayton Company, Box 86510, Greensboro, N.C. 27410.

COLLECT STAMPS For Profit! How to start, Where to sell. Complete guide to America's most popular hobby. \$1.50. Delmar Studios, Dept. P33, 210 Fifth Avenue, New York, N.Y. 10010.

\$250-\$500/THOUSAND, Stuffing Envelopes, complete assistance. Send stamped addressed envelope. Royal Treasure's, 29715 Cambridge, Flat-rock, Michigan 48134.

MAILORDER SECRETS REVEALED! Unlimited profit opportunity—no capital required. Request free report. Value House, Box 3638A, New York 10011.

PROFITABLE OCCUPATIONS

APPLIANCE Repair. Simple. Practical. Free Details. Philippi, 1225 Hillside Place, North Bergen, N.J. 07047.

LAMINATING Home business in spare time. Material costing 42¢ returns \$3.20! No selling. Let your Mailman be your banker. Write for full particulars free. Warner, Room LC-2-FC, 1512 Jarvis, Chicago, IL 60626.

SNARPEN—Scissors, Pinkers, Light, compact equipment. Supplies. Blackhawk's, Sheldon, Iowa 50243.

FREE Catalogs. Repair air conditioning refrigeration. Tools, supplies, full instructions. Doolin, 2016 Canton, Dallas, Texas 75201.

FT. SMITH Auction School. Ft. Smith, Ark. 72901. Resident & Home study. Veteran approved.

\$100.00/DAY POSSIBLE!!!! Buy Scrap Gold . . . Easy . . . Complete manual. \$4.00 Satisfaction Guaranteed . . . Brown, 95c Springdale, Atlanta, Ga. 30306.

PLASTERCAST!!!! Profitable home business. Molds available. Details: Lynnette, 6251C Mentor Park, Mentor, Ohio 44060.

BAKE New greaseless doughnuts in kitchen. Sell stores. Free recipes. Michael Ray, Waseca, Minn. 56093.

"CANDLEMAKING" Profitable Spare or Full Time Business. Easy To Learn with Step-By-Step Handbook Course. \$3.00. Guaranteed. Riellano Enterprises, 2108-A Davidson Ave., Bronx, New York 10453.

HOW To Make Money writing short paragraphs. Information free. Barrett, Dept. C-27-L, 6216 N. Clark, Chicago 60660.

SALESMEN—DISTRIBUTORS

MEN-Women! Show new Hertel reference Bible. Astonishing 3-dimension Nativity cover. Fully referenced scripture text commands instant attention. Top commission, bonus. Liberal credit plan. No investment. Demonstrator furnished. Write International Book, Dept. PM, Box 118, Wichita, Kansas 67201.

SELL CALENDARS, SPECIALTIES Repeat Business-Free Details - Fleming, 6535 Cottage Grove, Chicago 60637.

AUTOMATIC Fishhooks. Profitable Samples, \$2.00 (refundable). Aron, 61-PM, Mastic Beach, New York 11951.

100% PROFIT! Volume repeat orders! Amazing six in one lubricant. Write: Distributorship, 1240PM Alandale, Albany, Oregon 97321.

EARN \$100.00 daily selling Solargem rings, jewelry. Free catalog. Anka, Box 8036-PM, Cranston, Rhode Island 02920.

MAKE MORE MONEY IN 1976. Start now on a full or part time basis. Show our new 1977 line of Calendars, Promotional Advertising and Gifts to local Business Firms. No investment, collections or District Managers. Many promotions to help you get started. Prompt, friendly service with 67 year old firm rated AAA-1. Weekly commissions and liberal bonus. Write John McKee, Dept. CPM2, NEWTON MFG. CO., Newton, Iowa 50208.

BEAUTIFUL 7" Dolls of Many Lands. Authentic Costumes. Sample set of twelve different, \$24.00. Brochure free. Victor Calamia, Box 276DM, Woodside, N.Y. 11377.

DISTRIBUTORS—Wanted Dow Seed & Fertilizer Broadcasters in Business Since 1928. Box 628, Conway, Ark. 72032.

AGENTS WANTED

SPARE TIME CASH. Sell famous Hanover Shoes. Samples, sales kit free. No experience needed. No age limit. Big commissions. Hanover Shoe, Dept. 1533, Hanover, Pa. 17331.

NEW Happy Face Bicentennial Labels 100—75 cents. Agents Wanted. Columbia, Box 398, Ocean Park, Wash. 98640.

PROFITABLE Business! No investment! Take orders for America's finest shoes from friends, neighbors! Profitable. Easy. No experience needed. Selling outfit free. Mason Shoes, K-183, Chippewa Falls, WI 54729.

PRINTING Advertising Salesmen—Excellent money-making sideline selling Decalcomania Name Plates, small quantities. Advertising Specialties, sign letters. Free Samples. Balco XL, Boston, Mass. 02119.

YOUR Own business. Used Suits \$1.50; Overcoats 65¢; Mackinaws 35¢; Shoes 12½¢; Ladies' Coats 30¢; Dresses 15¢. Enormous profits. Catalog Free. Nathan Portnoy Associates, 2109-AA Roosevelt Road, Chicago, Illinois 60608.

EMPLOYMENT INFORMATION

OVERSEAS JOBS—WORLDWIDE!—ALL OCCUPATIONS—To \$4100/Month! \$2.00. Global-D, Box 99494, San Francisco, CA 94109.

WORK In Beautiful Australia! Complete details: Salaries, Schools, Texas, Rent, Immigration requirement forms, plus Giant Employers list. Send \$2.00. Jobs, P. O. Box 60474, Concord, California 94520.

EMPLOYMENT!! U.S./I Foreign! Skilled, unskilled, equal opportunity, all fields, directory, application, resume instructions—\$3.00. National Information, Dept. 1-2, 422 Washington Building, Washington, D.C. 20005.

MATURE PEOPLE NEEDED. Apartment Management. Nationwide. No investment. Free details. Shockey Associates, 30427A Santa Barbara, California 93105.

EXCITING OVERSEAS JOBS! Over 100 Countries . . . Now Hiring! All Occupations. \$800-\$5000 Monthly. Latest Printouts \$2.00. Jobworld, 6311-A Yucca, Los Angeles, California 90028.

BOOMING MIDDLE EAST JOBS!!! \$800-\$5000 Monthly! All Occupations! Free Transportation! Directory/Forms \$2.00. Worldwide, Box 948-A, Long Beach, California 90801.

SOLDIERS OF FORTUNE. Middle East. \$1100-\$2000 Monthly! Information/Forms \$3.00. Captain Miller, Box 91395-A, International Airport, Los Angeles, California 90009.

TEXAS. Certain Areas Booming. Free Details. REPORTS, Box 38618, GF2, Houston, Texas 77088.

GOVERNMENT OFFICER: Over 18? Have elementary education? You can become **COMMISSIONED OFFICER** under Gath. Now signing up. All localities. No examinations. Permanent. Profitable. Quick income. Please Contact: SCORE, Box 31A, Columbia, Maryland 21045.

AUSTRALIA NEEDS YOU!! JOBS, JOBS . . . ALL SKILLS NEEDED. Government paid passage. Complete Factbook contains: Wages, Farming, Recreation, Rents, Taxes. . . Plus Giant Employers List. Guaranteed. \$1.00. Leman Enterprises, Box 228-E, Santa Maria, CA 93454.

AUSTRALIA needs skilled labor. Many jobs available. Giant employers list included. Complete factbook, \$1.00. ESSCO, Box 2738-3, Lake Katrine, New York 12449.

AUSTRALIA—Work. New Information. Directory. \$1.00. Sales, Dept. DA3, P.O. Box 1251, Pomona, California 91769.

LIVE And work in Florida. 50,000 job opportunities. Free information, Ellee, Box 801-JC, OpaLocka, Fla. 33054.

HELP WANTED

SELL Bibles, Books, Scripture items. Good profits. Free information. George Noble, Dept. PM-26, 542 S. Dearborn, Chicago, Illinois 60605.

OVERSEAS EMPLOYMENT . . . Europe, Australia, South America, Asia! All Occupations! \$700 - \$4,000 monthly! Employment International, Box 29217-AB, Indianapolis, Indiana 46229.

WORK OVERSEAS. All continents. All Occupations. Earn \$10,000 to \$50,000, plus fringes. Free Details, Mack Publishing, Box 1219, Boston, Mass. 02104.

TEXAS REFINERY CORP. offers **PLENTY OF MONEY** plus cash bonuses, fringe benefits to mature individual in your area. Regardless of experience, airmail: X. H. Pate, Pres., Texas Refinery Corp., Box 711, Fort Worth, Texas 76101.

REAL ESTATE & FARMS

FREE CATALOG! Exciting Spring edition of country property! Over 5,400 New properties described, pictured—Land, Farms, Homes, Businesses—Recreation, Retirement! Selected Best throughout the U.S./I 76 Years' service—670 Offices, 42 states Coast to Coast. Mailed Free from the World's Largest! Strout Realty, Inc. 7-MX S. Dearborn, Chicago, Ill. 60603.

BIG . . . SPRING '76 CATALOG . . . Free! Over 2,600 top values coast to coast! **UNITED FARM AGENCY**, 612-PM West 47th, Kansas City, Mo. 64112.

GOVERNMENT LANDS FROM \$8.50 ACRE!—INVESTMENT, RECREATION, FARMING—\$2.00. Land-D, Box 99494, San Francisco, CA. 94109.

WYOMING RANCH LAND. 10 Acres \$30.00 down, \$30.00 month. Owner-Mike Gauthier, 9550 Gallatin, Downey, Calif. 90240.

\$5 ACRE, Canadian Border—hundreds campsites, islands, farmlands, directly from tax authorities. (Non-profit). Lists, photographs mailed. Register, Room 10, 110 Church Street, Toronto 1, Ont. Canada

\$3.50 ACRE! USA and Canada. Lists, photographs mailed. Government Lands, 421-PM Center, Lewiston, New York 14092.

"CANADIAN Country Acres and Lots." Our 60th year. Free catalogue. Tax Sale Service, Room 301-PM, 85 Bloor Street, East, Toronto, Ontario M4W 1B5.

CENTRAL Ontario—Choice 640 acre Sportsmen's paradise still available—\$20.00 plus \$6.50 taxes yearly. Maps, pictures, \$2.00 (Refundable), information Bureau, Norval 4, Ontario, Canada.

GOVERNMENT LANDS From \$7.50 Acre! Vacationing, Farming, Investment! Exclusive "Government Land Buyer's Guide" . . . plus "Land Opportunity Review" listing lands throughout U.S. Send \$2.00. Surplus Lands, Box 19107-AY, Washington, DC 20036.

CANADIAN LAND FROM \$35.00 AN ACRE. Choice properties across Canada. Low monthly payments. Ideal for cottages, hunting, fishing, investment. Free catalogue. Canadian Estates Land, 286 Lawrence Avenue West, Toronto, Canada, M5M 3A8.

CALIFORNIA Acreage. Excellent investment potential. \$20.00 down, \$20.00 monthly—Box 35291, Los Angeles 90035.

(Continued on next page)

REAL ESTATE & FARMS

(Continued from preceding page)

BEAT Renting!! "Owning Your Own Home" now possible! Free literature reveals how. Writer: Stoneybrook, 186D Main, West Chelmsford, Mass. 01863.

CANADIAN 100 acre hobby farm 27 miles from nation's capital, new split level, deer, ducks, skidooing, near planned development, photo, \$95,000.00. 613-825-3225, Ottawa, Ont.

FREE CATALOG! (Covering 16 States)! All types property! Photos! **SAFE-BUY** Real Estate Agency, Inc., Box 589-PM, Little Rock, Ark. 72203.

GARDENING & LAWN CARE

HYDROTROPIC Greenhouses \$49.00 Distributors invited. Hydrotropics, 1538 E. Chestnut, Santa Ana, Calif. 92701.

AMAZING Inflation fighter, **MIRACLE PLASTIC GARDENING**. Delicious vegetables—no cultivating, complete instructions \$2.00. **TUCKER'S**, Box 1244, Jonesboro, Arkansas 72401.

FLOWERS, PLANTS, & NURSERY SUPPLIES

LEARN Landscaping and the growing of plants. Start a profitable business part or full time. Free information without obligation. Lifetime Career Schools, Dept. A-6, 2251 Barry Avenue, Los Angeles, California 90064.

GINSENG Bringing \$35.00 Pound. Have seeds, roots. Information, K. Collins, Viola, Ia. 52350.

KILL Insects Nature's Way. Electric Insect Trap. Safe. UL Approved. 30-day Moneyback Guarantee. \$59.50 ppd. MasterCard, BankAmericard OK with cardholder's name, no. expiration date. Insect Trap, P.O. Box 3022, Providence, R.I. 02818.

CONSTRUCTION PLANS, BLUEPRINTS

SAUNA Instructions—How to Build Room. Save hundreds of dollars. \$3.95 Postpaid. Included—\$50.00 Coupon Toward The Purchase Of Sauna Heater. Manusales, Box 4479, Minneapolis, MN 55321.

BUILD Your own Solar Heating Unit for under \$600.00. Send \$10.00 for plans. Ridgewood Solar Company, Dept. 11, Eight North Main, Yeagertown, Pa. 17099.

75 HOME PLANS including year-round VACATION homes! Cost cutting booklet FREE \$2.25. Guaranteed. Better Homes, Box 6498, Forest Hills, N.Y. 11375.

LOG CABINS AND "A" FRAMES

BUILD Log Cabins, Rustic furniture, Fireplaces! Complete manual \$3.00. . . . "A" Frame plans, \$2.00. Guaranteed. . . . Beels, 956 Springdale, Atlanta, Georgia 30306.

"A" FRAME CABIN. 1184 square feet: \$1950. material. Purchase locally. Complete plans, instruction manual & material list: \$5.00. Moneyback guarantee. Plan #4907, "Dependable Products", Box 113, Vista, California 92083.

NATURAL STONE HOUSE. Gather Rocks Free. Build in One Summer! Need Pickup, Hand Tools—No experience! Guaranteed "HOUSE OF STONE" manual, \$3.00. Stonehouse 176, Sweet, Idaho 83670.

LOG CABIN plans & detailed instructions: \$3.50. Moneyback guarantee. "Solley", Box 597, San Marcos, California 92069.

LOG CABIN Building instructions. 304 pages. Illustrated! Moneyback Guarantee. \$3.95 postpaid. Glenn Smith Enterprises, Box 1513, Dept. I, Akron, Ohio 44309.

PLANS! Log Cabins, "A" Frames, Greenhouses, Fireplaces. Guaranteed! Free details! Wesco, P.O. Box 891AB, Michigan City, IN 46360.

HOME CRAFTSMAN

WOOD—Domestic and Imported Hardwoods! 3500 items! Clock, musical instrument kits, Tools . . . discount prices! Hard-to-find hardware. 144 page catalog, 50¢. Craftsman, Dept. AX-26, 2729 Mary, Chicago, Illinois 60608.

TABLES, Practical designs—dining, sewing, work, study, play. Detailed plans \$2.00. **SKILLMAN**, 101 Valley View, Coquille, Oregon 97423.

101 PATTERNS, Gifts, Novelties, Shelves, Action Windmills, plus "Make Money Jig Sawing". \$3.00. Mastercraft, 25M, P.O. Box 631, Park Ridge, Illinois 60068.

CHARM From the past. Build old fashion Wooden Water Pump, Great Decoration Item in the lawn. Plans \$2.00. Marcel Houle, 267 Denison, Granby, Quebec, Canada. J2G 4E3.

1600 SOURCE LISTING FOR ANYTHING YOU WANT \$2.00. Keyfile D, Box 99494, San Francisco, Ca. 94109.

LOW Cost Thickness Planer Sander Plans \$2.00 refundable. Power Tool Bargains Catalog \$1.00 refundable. Rego, 49P Downing, Fall River, Mass. 02723.

HIFI Speaker enclosures. Build for half. All sizes. Detailed plans \$2.00. **SKILLMAN**, 101 Valley View, Coquille, Oregon 97423.

HOW TO Make kitchen cabinets and furniture. New illustrated manual shows you the latest step by step methods. Guaranteed. Writer: Flint Woodworking, 1027

CATALOG FULL SIZE FURNITURE PLANS—\$1.00. Relanded with next order. Traditional Early American, over 1501 Furniture Designs, 1425 Sherman, Dept. CP-76, Evanston, Illinois 60201.

CABINETMAKING MADE EASY And "How to Make Formica Counter Tops." Two excellent guides tell you build kitchen cabinets and counter tops like professionals. Extraordinary guides bring master craftsmen's shortcut methods. Satisfaction guaranteed. Write: Japs, 126-P Seventh North, Hopkins, Minn. 55343.

PICTURE Framing—Profitable full or spare-time business. Easy to learn with handbook-course "Guide To Picture Framing Profits." \$2.00. Guaranteed. Free framing-supplies catalog included. Japs, 126-PM Seventh North, Hopkins, Minnesota 55343.

FREE ENERGY! Sources of Supplies, plans, windmills, solar, methane, etc. Send \$2.00. PER-0, 15 Riverside, Saginaw, MI 48602.

PLANTERS—(Hanging/Floor), Architect Designed, Easy To Make For Fun And Profit. 10 Plans \$2.00. Planters, Box 367, Waterford, Michigan 48095.

12 GROSS Small Machine Screws, Nuts, Mixed \$6.95. 9 Pounds Mixed Wood Screws etc. \$12.75. R. g. \$26.95. Nuts, Bolts, Screws, Washers. Catalog. 75¢. Nutty Co., 1576SMS, Fairfield, Conn. 06430.

EXOTIC Lumber from ash to Zebrawood. Brochure 50¢. Hardwoods, 2125 Goodrich, Austin, Tx. 78704.

PICTURE FRAME MOULDING For home craftsmen! Precut or random lengths. Good selection, reasonable prices. Details 35¢. Frames, PO Box 284, Nashville, Tennessee 37221.

TOY AND GAME PLANS—Eight fun projects—\$2.00. The Wood Shop, 2202 N. Broadway, Sidney, Ohio 45365.

PM'S GREAT, NEW MASTER HOME CARE GUIDE. The Latest and Greatest In The Popular Mechanics Master Guide Series. Lays Out All You Need To Know About Home Repairs. From Basement Waterproofing to Roof Repair. 24 Laminated, Wipe-Clean Sheets on 12 Stand-Up, Hang-Up Boards. 150 Charts and Illustrations. Properly Used, It Can Save Thousands of Dollars. \$4.49 ppd. PM Master Home Care Guide, Dept. HE, Box 1014, Radio City, N.Y. 10019.

DO-IT-YOURSELF

"MAKE Colorful Concrete Mushrooms". No Molds To Buy. Manual \$3.00. Matt, 1834 North 21st, Sheboygan, Wisconsin 53081.

SOLAR Energy Handbook, 3rd Edition, \$9.00. Ficosa, 2901S Wentworth, Milwaukee, WI. 53207. Satisfaction Guaranteed.

SOLAR Collectors, 68 cents per square foot—not \$6.00. Superior performance too. Information \$2.00. Chalett, Box 8106, Rochester, New York 14617.

1400 CATALOGS Listed and Described Sources for EVERYTHING Imaginable! Rush \$2.00. **MASTERLOG**, Box 24413-Y, Oakland, California 94623.

ELECTROPLATING. Complete amateur's textbook All metals Electroplate metallic/nonmetallic items \$7.00. Details free. Tropic, Box 95-P3, Palm Bay, Fla. 32905.

IF YOU Have the dough to buy a \$200.00 workbench, buy it. If not, send \$1.00 for our poor-man's workbench plan and build your own for less than \$30.00. Full instructions and material list. Way-Mar, 58 Underhill Road, Scarsdale, N.Y. 10583.

ENERGY Saving Plans, Water Wheels, Windmills, Electric Cars, Home Power Plans, free info, plans list. Goodman Associates, 4 Berryville Pike, Summit Point, WV 25446.

DESIGN And build your own T.V. Antenna. Complete instruction book, \$3.00. E.H.P. Engineering, 7011-180th SW, Edmonds, Wa. 98020.

LEARN More, Earn More, How-To-Books On Everything. Send Stamp. Box A, Paramus, N.J. 07652.

SOLAR HEAT, Simple unit also acts as storm window. Plan, \$3.00. 5408 Fontaine Rd., Knoxville, Tenn. 37920.

ENERGY Educational newsletter. Details, H. Williams, 5 Buckman, Winchester, Massachusetts 01890.

PAINT Signs! Using Patterns! Trial Alphabet \$2.00. (U.S.A. Only) Harwell's, PM276, Byrdstown, Tenn. 38549.

KEEP Warm with less fuel. 16-page idea-crammed, Popular Science-approved booklet. \$1.00. Hartung, 655 Main, E. Greenwich, R.I. 02818.

LEARN: How to make man made marble & Plastic Roof coating cheaper. Send \$1.00 for Particulars. Rwok Lab, P.O. Box 444, Eufaula, Oklahoma 74432.

STOP PAYING EXPENSIVE TV REPAIRS. "Do it Yourself." New easy method. Details free. Research Publications, Box 235, Brea, Calif. 92621.

SILKSCREEN PRINTING INSTRUCTIONS: Practical illustrated guide for professional results. How to make frames, artwork, photographic stencils, decals, print on any material. \$3.00. Treehouse Records, 1220 Northwest 39, Oklahoma City, Okla. 73118.

TELEPHONE Unlimited, Equipment, Supplies, Catalog 50¢. Box 16548, Costa Mesa, California 92626.

CATALOGUE \$1.00 Burglar Alarm Diagrams Parts. Wholesale Security Devices, 21415 West Eight Mile, Detroit, Mich. 48219.

PM'S FAMOUS MASTER SHOP GUIDE. One of The Most Important Tools You'll Ever Own! Lays Out Everything You Need To Know About Nails, Screws, Bolts, Drills, Adhesives, Ladders, Masonry, Plumbing and Electrical Work. 24 Stand-Up, Hang-Up, Wipe-Clean Laminated Pages. 56 Charts plus a Built-In Ruler, Protractor and Compass. Solid Value at \$4.49 ppd. PM Master Shop

REPRODUCTION MOLDS

MOLDS For Ornamental Concrete Products. Catalog 900 Fiberglass Molds \$2.00. Plycrete Mold Co., Elk Rapids, Mich. 49629.

ARTS & CRAFTS

LIQUID LATEX Paratol. 708-G compound for making rubber mold. Toughest, finest quality. Instructions. Money-back guarantee. Postpaid \$3.95 quart, \$12.00 gallon. Testworth Laboratories, Inc., 401 S. Main St., Columbia City, IN 46725.

LEATHERCRAFT Catalog. Tools, Leather, Dyes, Dressings, Saddle Stamps, Buckles, much more. Send 25¢ to MacPherson Bros., P.O. Box 395, San Francisco, Calif. 94109.

GLASS BLOWING Kits and Supplies—Literature Upon Request—Willis Glass, P.O. Box 3460, Anaheim, California 92803.

MAKE Figurines, plaques, lawn ornaments. Molds, plastercraft kits, liquid rubber. Sample and catalogue 25¢. Woolley Company, Box 29-B, Peoria, Illinois 61601.

"GETTING Started in Stained Glass" 25¢. Whittemore, Box 2065Y, Hanover, Mass. 02339.

WHOLESALE Handicrafts Supply Directory \$3.00. RPH, 924 Winter Street, Stamford, Conn. 06905.

BINOCULARS, TELESCOPES, MICROSCOPES, MAGNIFIERS

HUGE Discounts!! Bushnell, B&L binoculars/scopes. Free catalog & price list. Write: Marigold, Box 5038-C4, South San Francisco, Ca. 94080.

CAMERAS AND EQUIPMENT

FREE! FREE! BARGAIN BOOK. Central Camera Co., Dept. 321, 230 S. Wabash, Chicago, Ill. 60604.

PHOTO FINISHING

LOOK!—Special Money Saving Offer: Kodacolor Rolls developed with Jumbo Prints \$1.60. B&W 49¢. Big Discounts on supplies. Enclose Advertisement. Wisconsin Film, Dept. E, LaCrosse, Wisconsin 54601.

COLOR SLIDES

GAF Color Slides. All countries. Catalog 25¢. Worldwide, 7427-M Washburn, Minneapolis, Minn. 55423.

FREE 35MM Color Slide Encyclopedia. Same slides used in TV, national magazines, 126-pages individual listings. Write Wolfe Worldwide Films, Dept. 14-26, Los Angeles, Ca. 90025.

MOTION PICTURES & SOUND EQUIPMENT

UNUSUAL Movie supplies. Free circular. Esor, 47th Holly, Kansas City, Missouri 64112.

SUPER 8MM, 16mm, 8mm silent and sound film classics. Free catalog. NILES, 1141PM Mishawaka, South Bend, Ind. 46615.

SUPER 8, 8mm, 16mm, 35mm, B&W and Color Film. Supplies, Processing Equipment. Send 25¢ for 84-page catalog refundable with order. Superior, 448 N. Wells, Chicago 60610.

175-FT. 8MM. CLASSIC SAMPLER . . . ONLY \$1.99. Highlights from heyday of the silent! Chaplin, Laurel & Hardy, Fairbanks, Keystone Kops, Gish, Pickford, Chaney, the first Indianapolis 500 and more. Order today . . . specify standard or super-8. Free catalog: 8MM & 16MM (silent & SOUND) movies & 35MM. 2" x 2" color slides, Blackhawk Films, 8018 Eastlin-Phelan Bldg., Davenport, Iowa 52808.

8MM—SUPER 8—16MM MOVIES! Biggest Selection! Lowest Prices! Free Catalog! Cinema Eight, Box PM, Chester, Connecticut 06412.

16mm SOUND Films, Features, Shorts. Bedner, 5300 So. Talman, Chicago 60632.

RADIO, TELEVISION & HAM EQUIPMENT

HEAR POLICE/FIRE Dispatchers! Catalog shows Directories of "Confidential" channels, Receivers. Send postage stamp! Communications, Box 56-PM, Commack, NY 11725.

CANADIAN Catalogs—Giant Savings, Surplus, Clear-outs, Bankruptcy Stocks, Factory Deals. Rush \$1.00. Etco-PM, Box 741, Montreal "A".

36¢ RADIO & TV Tubes. Free catalog. Cornell, 4213-17 University, San Diego, California 92105.

GOVERNMENT Surplus receivers, transmitters, scopes, parts. Catalog 25¢. Meshna, Nahant, Mass. 01908.

FREE Educational Electronics catalog. EduKits Workshop, Department 753B, Hewlett, New York 11557.

END Isolation on the road. Free brochure. How CB radio will help you. Write: Ping Pong Peddlers, 6107 East 24th, Indpls., Ind. 46219.

MINIATURE EARPHONE RADIO, Easy Plans \$2.00. Parts \$4.00. JMG Enterprises, OVS, Box 1271, Great Neck, NY 11023.

HIFI, TAPES, & RECORDS

9,500 Old Radio Shows! Catalogue \$1.00. Box 9032-2, Wyoming, Michigan 49509.

(Continued on next page)

HIFI, TAPES, & RECORDS

(Continued from preceding page)

FREE CATALOG—Electronic Kits—Amplifiers—Pre-amplifiers—Psychedelic Strokes—SCA Adaptors—Color Organs—Digital Instruments—Guitar Amplifiers, FREE Subscriptions. SWTPC, Box PM32040, San Antonio, Texas 78284.

RECORD-TAPES! Discounts to 73% on all labels; no purchase obligations; newsletter; discount dividend certificates; 100% guarantees. Free details. Discount Music Club, 650 Main St., Dept. 1-26, New Rochelle, New York 10801.

CASSETTE LIBRARY. Motivational, educational, training, nostalgic, sales, rentals. Catalog \$1.00 refundable. Drawer 2871-P, Springfield, Mass. 01101.

FREE! Soundtrack Auction 11st. Whalon, 2321 P Hill, Redondo Beach, California 90278.

CLASSICAL CASSETTES! FREE CATALOG. Better quality, 50% less cost than records! CCC, Box 506PM, Saddle River, N.J. 07458.

RESIGNATION Address of U.S. President. This historical event preserved for you on tape. Only \$4.95. Guaranteed. Historical Tapes, Box 823, Eagle River, Wisc. 54521.

FREE CATALOG, Collectors Records, Discs. Box 7216, Louisville, Ky. 40207.

MUSIC INSTRUCTIONS & INSTRUMENTS

ACCORDIONS—Famous makes. 40 models, 5 Day Home Trial. Easy terms. Trades. Free Catalog! Money saving Importer-to-you Price List. Write: Accordion Corporation, Dept. R, 5535 Belmont, Chicago 60641.

LEARN GUITAR. Quick proven method. Chords too. Guaranteed. Only \$3.79. Jala, Dept D-4, 13464 Delano St., Van Nuys, Cal. 91401.

MUSIC BOOKS—LOW COST! Free Brochure; Franklin, R.D. 3, Box 305K-M, Somerset, N.J. 08873.

GUITARISTS' 72 PAGE CATALOG. Save up to 40% on guitars, amplifiers, sound reinforcement systems, accessories, books. **MUSICIAN'S SUPPLY, Inc.,** Dept. T, Box 1440, El Cajon, Ca. 92020.

OUTSTANDING Tone On Wooden Instruments. Instruction \$5.00. Marc Anthony, P.O. Box 1205, Crescent City, Ca. 95531.

EASY To play and make, quality dulcimers, banjos, thumb pianos, hammered dulcimers; instruments and kits. **HERE, INC.** #P, 410 Cedar Avenue, Minneapolis, Minnesota 55404.

ACCORDION Top Brands. Cordova, Buy direct. Tremendous discounts. Trades accepted. Free brochure PM. Accordion-O-Rama, 874 Broadway, N.Y.C. 10003.

30% TO 90% DISCOUNT! Any Model: Guitar, Amp, Drum, Banjo, Dobro! Free Catalog! Warehouse P68, Box 11449, Fort Worth, Texas 76109.

WHOLESALE! Professional Guitars, PA Systems, Altec Speakers, 240W RMS Amplifiers. Free Catalog. Carvin, Escondido, Calif. 92027.

POEMS Wanted for songs. Nashville Music Productions, Box 40001-P, Nashville, Tennessee 37204.

PLAYER PIANOS; PUMP ORGANS—books; repair manuals. Catalog \$1.00, refundable first order. Vestal Press, Box 97, Vestal 11, NY 13850.

LEARN Banjo. 5-String Bluegrass. No music. Makes learning easy. Free details. Blaylock, Box 25-M, Marietta, Georgia 30060.

UP TO 60% Discount Name Brand Instruments. Catalog. Freeport Music, 455F. Route 110, Melville, N.Y. 11746.

ACCORDIONS Manufacturing, 6846-P North, Chicago 60635. Concertinas - Chromatics - Heligons - Hohners - New - Used - Repairing - Wholesale Catalogs Free.

POEMS Songs wanted. Recording. Publishing guaranteed. Royalties. Radio-TV release. Broadway Music, Box 7438-PM, Sarasota, Fla. 33578.

ELECTRIFY Player Pianos, Pump Organs Quickly, inexpensively with Lee Silent Suction Units. Write: Leo Music, 525F Venezia Avenue, Venice, California 90291.

NATIONAL sale, 10% off to makers and repairers of all string instruments. Wood, parts, accessories & thousands of items listed in new 64-page catalog. Write today for your copy and price list. Enclose 25¢ to cover postage & handling. International Violin Co., Dept. RS, 4026 W. Belvedere Ave., Baltimore, Md. 21215.

MUSICIANS! 990 Unique Ways To Make Money Playing Music. Kerns, 7249-P Fairbrook, Baltimore, Md. 21207.

STRINGS! ALL KINDS! Accessories, Parts. Catalog 25¢. Stringking, M2, Box 5444, Lindenhill, Flushing, New York 11354.

KITS! Build dulcimers, guitars, harps, banjos, mandolins. From \$2.95. Finished instruments from \$23.95. Free catalog. 8665 West 13th-PM, Denver, Colorado 80215.

2 1/2 POUNDS OF MUSIC! 1,001 most popular new/old hits! Sing/Play your favorites—All Styles! 512 Pages! Music-Words-Chords. \$14.95. Money Back Guarantee. Imperial, Box 66-PM, New York, N.Y. 10022.

EDUCATION & INSTRUCTIONS

TIME-TESTED, PRACTICAL KNOW-HOW for an interesting, financially unlimited creative future in harmony with your own likes, situation, and abilities. Writer: Wing, 45 B Elmwood, Sparta, Mich. 49345.

WELDING TRAINING. Basic and Advanced Training for Major Processes—Arc, Gas, Pipe, TIG, MIG, Plasma. Hobart, a nonprofit school, is accredited member **NATTS.** Approved Ohio 70-12-0064 HT. Write for school bulletin and course schedule. **HOBART SCHOOL OF WELDING TECHNOLOGY**, Box 76, Troy, OH 45373.

HIGH SCHOOL AT HOME in spare time. If you left school without finishing, write today for free brochure about our home study method, diploma, and accreditation. American School, Dept. X245, Drexel at 58th, Chicago 60637.

LEARN Flower Arranging and Floristry. Start business or hobby. Free information on home study course. Lifetime Career Schools, Dept. B-522, 2251 Barry Avenue, Los Angeles, California 90064.

AUCTIONEERING: Mendenhall School Of Auctioneering. High Point, N.C. 27263. Free Information.

EARN WHILE YOU LEARN at home in your spare time. Modern Outdoor Equipment Repair School. Send for brochure, full facts. Dept. PM, 4225 N. Brown Ave., Scottsdale, Ariz. 85251.

DETECTIVE Profession. Easy home study; free tie-back or lapel pin, certificate, future. Professional Investigators, Box 41345. Dept. CP, Los Angeles, Calif. 90041.

CUSTOMIZE VANS, Trucks, cars. Learn big profit home business in spare time. Materials, tools included. Exteriors, interiors—painting, upholstery, special fittings. **FREE** Career Plan. Customizing Center, Dept. PBCCS, Newport, California 92663.

EXTENSION And Post-Graduate Awards in Philosophy, Art, Science, Botanic Medicine, Homeopathy, Radiology and others. 30 subjects. Curricular fee (airmail \$1.00 refundable). Registrar, Sussex College of Technology, Highfield, Danehill Sussex, England.

INSTANT MEMORY. . . . New way to remember. No memorization. Release "photographic" memory. Forget nothing! Liberates extraordinary knowledge talents, ESP, immediate results! Free information. Institute of Advanced Thinking. Box 606-PM, Pacific Palisades, California 90272.

USED HOME STUDY COURSES BOUGHT, SOLD AND EXCHANGED. DEMONTMOLLIN, 318 MAJORCA, CORAL GABLES, FLORIDA 33134.

LEARN Asleep or awake! Records, tapes, equipment! Free catalog! Drawer PM-400, Ruidoso, New Mexico 88345.

BARTENDING-Bar Management Course. Free Information. Universal Academy. Box 8180-AB, Universal City, California 91608.

ACCOUNTING CAREER. Many make \$1,200 monthly. You start, only 20 lessons, \$5.00 each. Pay as you learn and earn. State approved. Certificate. Start by Mailing \$5.00 for first lesson. Jenkins, Box 571, Taft, California, 93258.

RADIESTHESIA, Radionics, Dowsing, E.S.P. Courses and Equipment. Illustrated Catalog \$1.00 (refundable) Established 27 years. Dept PM/R Bruce Copen. Highfield, Danehill, Sussex, England RH17 7EX.

AUCTIONEERING, Resident or home Study Course. Free Catalog. Nashville Auction School, 1921 West End, Nashville, Tennessee 37203.

AUTOSUGGESTION. Sleep-learning headquarters! Tapes, records, books. Gigantic catalog free. Research Association, Box 24PM, Olympia, Washington 98501.

DETECTIVE—Training Course. American Detective Institute, Box 418-A, Fairfield, Alabama 35064.

OWN Collection agency. "Little Gold Mine!" Franklin Credit, Roanoke, Virginia 24004.

PIANO Tuning quickly learned with home study course. Diploma granted. American Tuning School, 17050 Teller Dr., Morgan Hill, California 95037.

LEARN Auctioneering. Term soon. Free Catalog. Reich World Wide College of Auctioneering, Inc., Box 949, Mason City, Iowa 50401.

EARN ELECTRONICS DEGREE by correspondence. Free brochure. Grantham, 2004 Stoner, Los Angeles, California 90025.

LEARN Sewing Machine Repairing. Men. Women. Lucrative profits. Profession with bright future. Gresslin Correspondence School, Box 927, Spencer, Iowa 51301.

DETECTIVE Course. Free Information. Universal Detectives, Box 8180-F, Universal City, California 91608.

PIANO Technology—Electronic organ servicing, learned easily at home. G.I. Approved. Free booklet. Niles Bryant School, Dept. P, 3631 Stockton, Sacramento, California 95820.

UPHOLSTERY Decorating. Free Booklet. Learn at home. Upholstery Decorating School, Dept. 5310-026, Little Falls, N.J. 07424.

FREE Book tells how you can learn camera repair and service. Home study or classroom. Write today! National Camera, Dept. EAD, Englewood, Colorado 80110.

UNLOCK your Future. Become professional Locksmith by spare time homestudy. \$13.00 in an hour possible. All tools, equipment included. Facts Free. Send name. Locksmithing Institute (homestudy), Dept. 1310-026, Little Falls, N.J. 07424.

LOVE THE OUTDOORS? Interested in living, working in parks, recreation areas? See if you can qualify, training at home. Important, respected, rewarding field. Details Free by mail National School (home-

LEARN Engine and Outdrive Principles of Operation thru Home Study. Write for School Catalog. Coastal Marine Institute, Drawer L, Daytona Beach, Florida 32018.

USED Courses! Books! List 15¢. Smith's, 124 Marlborough, Salem, Massachusetts 01970.

WATCH REPAIRING. Complete home training. Diploma awarded. Free sample lesson. Chicago School of Watchmaking, YB, Fox River Grove, Illinois 60021.

LEARN To fix typewriters and office machines. 30 million typewriters need skilled repairmen. Earn as you learn at home in spare time. Facts free. Send name. Typewriter Repair School (homestudy), Dept. 3310-026, Little Falls, N.J. 07424.

FCC LICENSE. 1st & 2nd Class. Electronics career courses by mail. G. I. Bill. FREE school catalog and info. School rep will try to call. Write CIE, Dept. KPM-04, 1776 East 17th St., Cleveland, OH 44114.

PINBALL, JUKEBOX, VENDING MACHINE Mechanics Needed—We train. Write: **CASINO TRAINING CENTER**, 2454 Industrial Road, Las Vegas, Nevada 89102.

REPAIR Sewing Machines. Profitable Trade. Easy to Learn. Details. Dykes Sewing Center, 187 FR, Rochelle, Ga. 31079.

MOTORCYCLE MECHANIC TRAINING, HOMESTUDY or RESIDENT. Write: **AMERICAN MOTORCYCLE INSTITUTE**, 1445 Skytrooper Road, Daytona Beach, Florida 32014.

PROFESSIONAL BARTENDING Course. Free Details. Mack Mixologists, Box 1219, Boston, Mass. 02104.

OUTBOARD, STERNDRIVE MECHANIC TRAINING. **AMERICAN MARINE INSTITUTE.** P.O. Box 9128, Daytona Beach, Florida 32020.

BECOME Professional BLACKJACK, ROULETTE, CRAPS dealer. Minimum age 21. Write: **CASINO TRAINING CENTER**, 2454 Industrial Road, Las Vegas, Nevada 89102.

SING Beautifully. Easily! Free Proof! Publishers, Box 118, Brooklyn, N.Y. 11203.

DRAFTING—Blueprint Reading (Mechanical, Electronic, Architectural). Home Courses \$25.00. Send \$2.00 first lesson. Prior Inc., 23-09 169th Street, Whitestone, New York 11357.

PASS Civil Service Examinations—Easily! Details. Arthur Alena, Box 173, Farmingville, New York 11738.

GREAT Directories—Degree-Granting Correspondence Schools, Medical Schools, Secret Societies, Government Publications, Aureap, Allenhurst, New Jersey 07711.

PARAPSYCHOLOGY Course. Certificate. Free Information. APRF, Box 5395-BC, Sherman Oaks, Calif. 91413.

RELIGIOUS VOCATION? Write: Church Of Holy Light Inc., P.O. Box 4478, Pittsburgh, Pa. 15205.

FOR INVENTORS

INVENTORS—If you have an invention For Sale, Patented or Unpatented. Write for Free Brochure Outlining Manufacturers Requirements, Royalty Rates. Kessler Corporation, C-52-Fl, Fremont, OH 43420.

PROTECT And sell your own invention yourself. No agency fees. Save hundreds. Send stamped envelope. Inventor's Helper. 3709 Atwell, Dallas, Texas 75209.

U.S. PATENT Office Searches, 234 Broadway, Room 3615, New York 10007. Free invention certificates.

INVENTORS—United States Patent Office Searches. Patent Development Engineering and Marketing of your inventions, ideas with manufacturer contacts. Send for **FREE INVENTION CERTIFICATES** and invention information. Serving inventors since 1948. George Spector, **LICENSED PROFESSIONAL ENGINEER—Patent Engineer.** Former **UNITED STATES PATENT OFFICE EXAMINER—3615 Woolworth Building, New York 10007.**

INVENTORS! A successful design engineer and inventor with over thirty years of aerospace experience would like to share his expertise with idea people who need help in any phase of product development and/or promotion. Without obligation write: Invention Services, Inc., Box 206, Richmond Beach, Washington 98160.

TIME-TESTED, PRACTICAL KNOW-HOW For inventing, patenting, marketing. My inventions sold worldwide. Wing, 45 C Elmwood, Sparta, Mich. 49345.

PROFESSIONAL INVENTING SERVICES. Free Folder! Tech Associates, 24 Cotton Avenue, Braintree, Mass. 02184.

PROTECT And market patentable and unpatentable ideas. Get rich. Free report. Warren, Box 79, Canby, Oregon 97013.

YOUR INVENTIONS/IDEAS-PATENTED OR UNPATENTED-EXPERTLY RESEARCHED, DEVELOPED, MARKETED FOR CASH/ROYALTY SALES. Professional, fee-based invention service company—second decade reliable service. Member: US Council International Chamber Of Commerce. Send for **FREE INVENTION RECORD FORM, PRODUCTION MARKETING BROCHURE.** "Your Invention—Its Protection, Development and Sale." Write: **THE IDEA PEOPLE, RAYMOND LEE ORGANIZATION**, 230 Park Avenue (A-113), New York City 10017.

FREE PAMPHLET: "TIPS ON MARKETING YOUR INVENTION." from an experienced fee-based invention service company. Write United States Inventors Service Company, Dept. P, 1435 G Street NW, Washington, DC 20005.

INVENTOR'S PARADISE—Combination Shows, Catalog Listing. **FREE DETAILS** To All Inquiries. Deadline Next Shows Soon. Paul Paulsen, Jr., 401 So. Columbia, Frankfort, Ind. 46041.

FOR INVENTORS

(Continued from preceding page)

NEEDING Assistance? INVENTION DEVELOPMENT FOUNDATION, 1540 Broadway, Suite 303, New York 10036.

SEARCHES With abstracts-patents \$12.50, with appraisal report \$18.50. "Filing Your Own Application" \$14.50. Professional Engineer, 701 Broughton Drive, Beverly, Massachusetts 01915.

ALTERNATIVE TO EXPENSIVE PACKAGING, Package-Your-Invention-Yourself Kit. Clear instructions, patterns, procedures, \$3.98. Art Department, Box 307, Spring Valley, Ca. 92077.

PATENT SEARCHERS Includes maximum speed, full Airmail report, copies of closest patents. Quality searches expertly administered with complete secrecy guaranteed. Ask for Free Invention Protection Form and "Patent Information." Write: **WASHINGTON PATENT OFFICE SEARCH BUREAU**, Dept. 7-B, 734 15th St., N.W., Suite 709, Benjamin Franklin Substation, P.O. Box 7167, Washington, D.C. 20044.

INVENTIONS WANTED

INVENTIONS Wanted immediately for promoting on cash or royalty. Patented, un-patented. Free booklet outlines royalty rates, requirements. Write Kessler Corp., C-52-1W, Fremont, Ohio 43420.

INVENTIONS—IDEAS WANTED. Developed, Marketed by leading professional organization for Cash/Royalty sales. **FREE EXAMINATION AND CONFIDENTIAL REPORT** of the Commercial Features of Your Patented/Unpatented Invention. **FREE COPY** "How to Safeguard and Market Your Invention to Industry." Write **LAWRENCE PESKA ASSOCIATES**, Dept. C, 500 Fifth Ave., N.Y.C. 10036 or call our Toll Free Number 800-223-6655. New York State residents call (212) 354-9696. Branch offices throughout the United States and Canada.

INVENTIONS MARKETING Cash, Royalties **FREE INVENTION PROTECTION CERTIFICATES**. George Spector Manufacturers Representative, Woolworth Building, New York, N.Y. 10007.

INVENTORS! Either we will sell or license your invention before you do, or we will pay you a cash bonus. **GILBERT ADAMS ORGANIZATION**, 80-B Wall St., Dept. 368, New York, New York 10005.

INVENTORS. We are currently manufacturing and marketing over 45 new products from inventors. Why not yours? Sell your idea **DIRECT** to our extensive factory complex in **JAPAN** and the **FAR EAST** with **CASH/ROYALTIES GUARANTEED!** We are Manufacturers, not Invention Brokers. Free Booklet, "The Invention Merry-Go-Round", Bristol-Lee Industries, Ltd., Box 1462-PM2, Alameda, Calif. 94503.

FREE DIRECTORY OF 500 CORPORATIONS SEEKING NEW PRODUCTS. Professional, fee-based invention service company. For important information on Protecting, Developing, Marketing your inventions/ideas for Cash/Royalty sales, write for **FREE INVENTORS KIT NO. A-84**. Raymond Lee Organization, 230 Park Avenue North, New York City 10017.

INVENTORS! MANUFACTURERS NEED NEW PRODUCTS. FREE "RECOMMENDED PROCEDURE", by a creative fee-based invention service company. Washington Inventors Service, 422-F Washington Building, Washington, DC 20005.

WANTED: Private Party with money and distribution contacts wished **PROPRIETARY PRODUCTS, CHEMICALS, PROCESSES, ETC.**, old or new, that can be expanded. Mr. Laurie, 27 Elery St., Cambridge, Mass. 02138.

HONGKONG Factory needs several new products every month to satisfy their overseas buyers. Particularly interested household items, toys, games, gadgets. Please send sketches or detailed explanation for evaluation and cash/royalty purchase. If you have an article/accessory cannot produce domestically because of quantity, price or labour, please try us. Hongkong Plastic & Metal Products Company, P.O. Box 9627, Kwun Tong, Hongkong.

MANUFACTURING

"**INVENTORS** ideas developed." Research. Models. Manufacturing. Sales. Free Brochure. Since 1942. William Parker, Box 6305, Orlando, Fla. 32803.

BUY IT WHOLESALE

400,000 BARGAINS Below Wholesale. Many Free! Liquidations . . . Closeouts . . . Job Lots . . . Single Samples. Free Details. Bargainhunters Opportunities, Box 730-A, Holland, Michigan 49423.

HEARING Aids, batteries, Wholesale. Catalog 25c. Fiston, Box 1444, New Preston, Conn. 06777.

WORLD'S Largest wholesale supply. 7853 American. Foreign Wholesalers. Rockbottom prices. Hongkong Clothes, Automobiles, Japan electronics. Free details. International Buyers, Box 16386M, Portland, Oreg. 97233.

STOREKEEPERS: Fun products. Free wholesale catalog. State occupation. Empire-PMF, 1916 Fifth, Sacramento, California 95814.

EXPORT—IMPORT

HONG KONG'S Best product catalogue, Airmailed \$2.00. Specialty PM26, Box-K 3086, HongKong

MIRACLE Light—No Batteries. Matches. Lasts for hours. Camping, Fishing, Driving Cars, \$1.95 + 50c. Kilbourne Enterprises, P.M. 101, Genoa, N.Y. 13071.

WORLDWIDE Trading Opportunities Weekly Report. Airmail \$3.00. Array Services, 104, Lorong "L", Republic of Singapore 15.

ORIGINAL Oil Paintings \$96 Dozen, Color Brochure 25c. McDaniel, 3632 Topax, Claymont, Delaware 19703.

FABULOUS Export-Import Business. Learn how to get started fast. Report reveals foreign suppliers. Ideal export items. \$1.50. Nifty Gifts, Dept. P, 5314 Pacific Pl., Los Angeles, Ca. 90022.

FOR THE HOME

DAMP BASEMENT? Book shows you how to fix it. GEPE, \$3.00 postpaid, Box 662, Elyria, Ohio 44035.

BUTCHER Blocks: 25% x 26 1/4, 32" H. \$187.00. Hard Maple Top. Bill Hines, Rt. #2, Buford, Ill. 62814.

OF INTEREST TO ALL

BLACKJACK - Earn \$50.00 hourly. Win every day. Guaranteed. Free Details, Scirater, Box 234 PM2, Williston Park, NY 11596.

TREMENDOUS SAVINGS. Book Teaches Economical Food Buying. Send \$3.00. Bankross, Box 4146-AA, North Hollywood, California 91607.

CRIMEFIGHTERS! Detectives-Police Catalog \$1.00. Don-Q, Box 548-PMO, Seattle, Washington 98111.

\$800 MONTHLY Possible addressing—stuffing envelopes (longhand-typing) your home. Experience unnecessary. Details, send stamped addressed envelope. American, Excelsior Springs, Mo. 64024.

MIRALITE SHAVING CREME. 5 Year supply for \$3.00 postage paid. No dangerous spray cans. Add water to miralite and shave. Leaves skin soft and smooth. Send check or money order to: **MIRALITE-JRS., P.O. BOX 228, SKOKIE, ILL. 60076**.

LOSING HAIR? BALDING? DANDRUFF? Doctor's authentic, copyrighted booklet with proprietary offerings \$1.00. Dr. Shiffer Laboratories, Box 398PM, Punta Gorda, Florida 33950.

INFLUENCE Anyone's thoughts in seconds. Siltzer, 157 Widmer, Wappingers, N.Y. 12590.

YOUR LIFE! HOW LONG?? Statistical odds of reaching any age. Details. McNiece, 4 Hemingway, Melville, New York 11746.

MONEY making plan \$1.00 to—Plans, Box 61, St. John's, Brooklyn, N.Y. 11213.

SMOKE YOUR OWN Delicious pastrami, turkey and ham. Thermostat controlled **SMOKER-COOKER** can be built for under \$50.00. Complete plans and family recipes \$5.00. Order now and we'll include a free sample of our famous "Hunter's Spice". Dateline, 9062 Walnut, Bellflower, California 90706.

OF INTEREST TO WOMEN

\$300.00 WEEKLY Possible Stuffing Envelopes. Free Supplies. Send Stamped Envelope. United, 3838 1/2 Van Dyke, San Diego, CA 92105.

\$500 MONTHLY Possible clipping items from your newspaper. Experience unnecessary. Details, send stamped addressed envelope, American, Excelsior Springs, Mo. 64024.

CONTESTS Be a winner. Corporate Secretary shares private secrets. \$1.00. Security Lane, Box 12130, Seattle, Washington 98112.

WANT a new car, color TV, new clothes? Learn hundreds of ways to make money. 5 months subscription Free. Write: Salesman's Opportunity Magazine, Dept. 571, 1460 Hancock Center, Chicago 60611.

GIFT SHOPPING

FREE Distinctive Gift Catalog 31 pages useful and novelty items for everyone order to-day. Mail Order House, 514 West Princeton, Gallup, N.M. 87301.

FREE CATALOG GIFTS, JEWELRY and the UNUSUAL. Kendrick's, 106-PM South High Street, Antlers, Ok. 74523.

10 FAMOUS French Perfumes—Luxuriously Gift Packaged. \$6.75 Postpaid—Two \$12.50. Andris, Box 34287, San Francisco, California 94134.

FREE! Illustrated Catalog of inexpensive gifts. Write, Gifts Galore, 6023 Waverly, Dearborn Heights, MI 48127.

MAN'S Fullsize folding umbrella, fits into attache case, \$7.59. Sarah Strickland, 9 Buchanan Rd., Enfield, Ct. 06082.

FREE Gifts Catalog. Write: Wesley Wickham, Rear 384 Stewart, Zanesville, Ohio 43701.

GIFTIME Catalog \$1.00 Refundable. Hanrahan Products, 7846-20th Ave., Kenosha, Wis. 53140.

DISTINCTIVE Gifts by mail for Free Catalog Write to: Wilfred's Gift House, 5557 Maple B182, Dallas, Texas 75235.

FREE CATALOG. Practical gifts. David Buckley, 428-B Milton, Elmira, N.Y. 14904.

CLOCKS, WATCHES, OLD GOLD, JEWELRY

HIGHEST CASH for Gold, Jewelry, Gold Teeth, Rings, Diamonds, Watches, Silver, Platinum. Mail Articles Today. Free gift with information. Chicago Gold & Precious Metals, 8 E. Monroe, Dept. 658, Chicago 60603.

CLOCK Movements—Battery, Electric, Chime, Grandfather—Tools; plus Fifty Ideas Making Decorator Clocks. Details \$1.00. Clock Repair Center, Dept. 202, P.O. Box 65, Carle Place, N.Y. 11514.

WATCH and Clock repairing books, tools, materials. Free catalogs. North American, Box 77-AQ, Fox River Grove, Illinois 60021.

WANTED—Gold, silver, platinum (any form). Coins. Information Free. Wilmot's, 345D South Glassell, Orange, Ca. 92666.

HIGHEST CASH IMMEDIATELY for Old Gold, Silver, Platinum, Jewelry, Gold Teeth, Watches, Diamonds, Spectacles. Free Information. Rose Industries, 29-A East Madison, Chicago 60602.

DIAMONDS Bought for cash. Mail your diamond jewelry today for cash or write—Baltimore Diamond Exchange, P.O. Box 1615, Baltimore, Md. 21203.

HIGHEST Dollar for Old Gold Jewelry, Rings, Watches, Bracelets, Gold Teeth, Any Condition. Mail Today. Replacement Guarantee. J&I Precious Metals Buyers, Dept. PM276 Box 14091, 1044 VanDyke, Detroit, MI. 48214.

WEARING APPAREL

ROCK STARS Tee Shirts, Jagger, Bowie, Eagles And Many More. Free Catalog. 75 Designs Ltd-M, P.O. Box 4001, Jersey City, NJ 07304.

RUGGED DENIM CARPENTER'S APRON. POPULAR MECHANICS Shop Apron! Constructed of 100% Burlington Industrial-Weight Cotton with 3 Full-Depth Nail Pockets. Bright Yellow PM Imprint and Wrap-Around 21" Length. It's a Tough Utility item for the Dedicated Do-It-Yourselfer! \$2.95 post paid. PM Apron, Dept HE, Box 1014, Radio City, N.Y. 10019.

HEARING AIDS

HUGE SAVINGS. Eliminate dealer mark-ups. Free Trial. Batteries Wholesale. Terms arranged. Lloyds-PMC, Rockford, Ill. 61104.

HEARING Aids, Batteries, Discount Prices. Free Trial. Write: Rhodes, Brookport, Illinois 62910.

FREE HEARING AID CATALOG—Save 1/2—by mail! Write: "MONEYSAVERS", 9530PM2 Langdon, Sepulveda, CAL 91343.

TOBACCO

HANDCARVED Meerschaum Pipes Wholesale Catalog. Nichols, Box 3144, Enid, Oklahoma 73701.

BRIAR, MEERSCHAUM. Pipe making materials. Pimop, Box 59211, Chicago, Illinois 60659.

MEERSCHAUM Pipes—Free Catalog. Conner Imports, Box 9574-PM02, San Jose, Calif. 95157.

EZ-WIDER 50 packs (year's supply) \$11.50. Catalog \$1.00. Repeat Sales, Dept. PM1, 180 Congdon St., Providence, R.I. 02906.

BRIAR PIPE Make or repair your own. Photocopy of article shows you all the details. Price \$1.00. Send order to: **POPULAR MECHANICS**, Dept. HE, Box 1014, Radio City, New York, N.Y. 10019.

CALCULATORS

INGENIOUS Pocket mechanical calculator. Adds, subtracts, multiplies, to seven digits. Send \$2.00 to: Calculator, 605 Engel Avenue, Park Ridge, IL 60068.

SCIENCE & CHEMISTRY

SCIENCE KITS And supplies, information; Schubel & Son, Box 21484-B, Sacramento, CA 95821.

DISCOUNT! Laboratory Chemicals, Glassware-Apparatus. Catalog-50c. Deluxe Scientific, 507 Huron, Manitowoc, Wisconsin 54220.

CATALOGUE Of Very-Interesting Chemical Products. Formulas, Books, Experiments, Supplies, Surprising Extras. \$1.00. Kenrus-C, Box 205, Staten Island, New York 10306.

FORMULAS, PLANS, ETC.

1,000 FORMULAS. Complete Master Collection \$10.00. Distributor, R7B68, Milton, Florida 32570.

ANY Formula \$6.00. Catalog—Manufacturing Treatise \$1.00. Belfort, Box 568, Chicago 60690.

PLASTICS

CASTOLITE Pours like water, hardens like glass without heat. Crystal clear, colors. Embed flowers, seashells, mementos, anything. Make fine gifts. Reproduce your designs with flexible molds any shape. Size. Profitable. Illustrated Manual Catalog \$1.00. **CASTOLITE**, Dept. 76B/PM, Woodstock, Illinois 60098.

PLASTIC LAMINATES. How to work with! You can turn out elegant finished products just by using hand or power tools. Resurface kitchen countertops. Correct countertop bubbles. Shows you laminating tricks you should know about. Photocopy of PM article. Price \$1.80. Send order to: **POPULAR MECHANICS**, Dept. HE, Box 1014, Radio City, New York, N.Y. 10019.

TREASURE FINDERS

FIND Lost Treasure. Coins. Gold, all metals. 12 models from \$59.95. **COMPASS METAL DETECTORS**, Dept. 705, 3700 24th Avenue, Forest Grove, Oregon 97116.

Tired Of DIGGING UP TRASH? The All New "Coin-Shooter" Rejects Bottle Caps, Tin Foil, Nails and Shallow Trash. Detects Gold, Silver Coins and Jewelry. Free Literature. **D-TEX ELECTRONICS**, Box 451-U, Garland, Texas 75040.

FREE Treasure Detective Claws! Department PB6N, 11 Coventry, Englishtown, NJ 07226.

FIND Buried treasure with patented metal detectors that distinguish Metallic trash from treasure, have push button and automatic tuning, ground pickup eliminate feature, great range, etc. Free catalogue. Gardiner Electronics, Dept. 9, 4729 N. 7th Avenue, Phoenix, Arizona 85013.

(Continued on next page)

TREASURE FINDERS (Continued from preceding page)

POWERFUL Metrotech locator detect gold, silver, coins, relics. Moneyback guarantee, terms, free information. Underground Explorations, Dept. A, Box 793, Menlo Park, California 94025.

TREASURE FINDER Locates buried gold, silver, coins, treasures. 6 powerful models. Instant financing available. Write or call for free catalog. Phone (713) 682-2728 day or night. Dealer inquiries invited. Relco, Dept. AA21, Box 10839, Houston, Texas 77018.

BURIED TREASURE—Locate up to Quarter Mile away with Ultra-Sensitive Directional Locator. Send for free, informative pamphlet. Research Products, Box 13441-AMC, Tampa, Florida 33611.

NOW FREE CATALOG. World's finest most powerful, largest line of mineral and metal detectors anywhere \$79.50 to \$565.00. Sold world wide. Warehouses and Distributors in U.S., Canada and Europe. White's Electronics, Inc., Dept. PA6P, 1011 Pleasant Valley Road, Sweet Home, Oregon 97386.

GOLD

FIND GOLD. Old Mines, Treasures, Pan Nuggets, Assay Gold Ore, Amazing Guide Reveals How. **DETAILS FREE.** Dave Hunt, Roosevelt, Utah 84066.

GOLD How To Find and Extract It. Maps, Diagrams. Complete only \$2.00. Monolith, Dept. B, P.O. Box 1397, Rockville, Maryland 20850.

PLACER Gold For Sale, \$3.00 per gram, cash or money order. Write to: Western Canadian Mining and Smelting Corp., 1939 Richter Street, Kelowna, B.C. V1Y 2N3 Canada.

PRECIOUS STONES & MINERALS

GET Free catalog no serious rockhound, gem cutter, jewelry maker, hobbyist or craftsman can be without. Full of bargains, exclusive items, low prices from largest suppliers and authorities in the field. Free new catalog just off the press, yours for the asking. Write: Grieger's, Dept. C-12, 900 South Arroyo Pkwy., Pasadena, California 91105.

500 POLISHED Gemstones \$5.00. Tumblecraft, 5401 James North, Minneapolis, Minn. 55430.

PLASTIC Casting Supplies, Molds, Jewelry Mountings, Cut Stones. Wholesale Catalog 25¢. Eloxite, 806B 10th St., Wheatland, Wyo. 82201.

GOLD 10 Small nuggets panned from Oregon Streams \$1.00. Robert Brandt, Sweethome, OR 97386.

CARTOONING, COMMERCIAL ARTS.

SIGN Painting—Easy method. Free Catalogue. Kaufmann Company, Centertown, Missouri 65023.

LEARN Sign painting at home. Free Talent test. Ben Kerns, Box 812-PM, Greenville, S.C. 29601.

MODERN Cartooning taught by mail. Write for free brochure. Cartoonorama—Box 263-PMN, Branford, Conn. 06405.

COMPACT 35 lesson Cartoon Course and Cartoonist's Magazine. \$3.00. Hartman, Box 30367, Lincoln, Neb. 68510.

FAST Commercial Art Course. Free Details. Box 1204-PM2, Youngstown, Ohio 44501.

ADVERTISING AGENCIES, ADV. SERVICES, MAILING LISTS

DON'T WASTE MONEY on worthless mailing lists! I have **FRESH** lists of new parents! Only \$12.00/ thousand, \$2.50/ hundred. **MY LISTS PULL ORDERS!** Sanders, 595 Main, Box 1482, Worcester, Ma. 01601.

ADVERTISING Ratebook leading newspapers, magazines. \$1.00. Chicago Advertising Agency, 28-E Jackson, Chicago 60604.

MAILING List, Most all Kinds, \$10.00 per M, 500 Circulars mailed \$7.00. Dixmailers, King, NC 27021.

TYPEWRITERS, DUPLICATORS, OFFICE EQUIPMENT

TYPING Correction Ribbon \$3.95. Specify typewriter. (Red-black strip required). Tru-Type, Box P670, Westport, CT 06880.

RUBBER STAMPS

FREE catalog—Rubber Stamps—Signature Stamps—Business Cards. Youngers Stamp Shop, Princeton, Iowa 52768.

FREE Literature, Self Inking Stamps, RME Stamps, 132 Farmcrest, Rush, New York 14543.

3-LINE Stamps, \$1.99, 1 Day Service. Free Catalog. R & J, Drawer G, Bridge City, Tex. 77611.

OFFICE SUPPLIES

MAILORDER RECORDS Help get increased business! Complete 32 Page Record Book shows your inquiries, orders, advertising, expense, etc. Only \$1.00. **W. E. KAPPEL, POPULAR MECHANICS, DEPT. R, 224 WEST 57TH STREET, NEW YORK, N.Y. 10019.**

PRINTING PRESSES, RUBBER STAMP OUTFITS

SIMPLE-X RUBBER STAMP PRESSES, Hydraulic operated electrically heated. Sizes 5" x 8", 8" x 12", 10" x 15". Starting outfits. Order for presses, supplies shipped day received. Send \$2.00 for Catalog and Brochure. Custom Manufacturers, Box 211-PM, Springfield, Mo. 65806.

PRINTING MACHINES. Offset, Mimeograph, Typewriters, Composing, Machines, Digraph, King, North Carolina 27021.

PRINT YOUR OWN—Printing Presses, type, supplies direct from factory. Send 25¢ for catalog and samples to: Kelsey Co., OM, Meriden, Conn. 06450.

PRINTING Presses, type, Supplies Lists, 10¢. Turnbaugh Service, Mechanicsburg, Pennsylvania 17055.

RUBBER Stamp Supplies; Starting Outfits. Catalog \$1.00 Refundable. Martin, 1432 Major, Jefferson City, Mo. 65101.

SPECIAL 20% Discount on New Custom Size Type Fonts. Stamp Presses, Supplies. Barco Type Mfg., 237 S. Evergreen, Bensenville, Ill. 60106.

TYPE FONTS, Hand Printing Presses, Supplies. 120 pages. \$1.00 deductible first order. Acme Type, 732 Federal, Chicago 60605.

SAME Day Shipment. Rubber stamps and supplies. Free wholesale price list. Star Stamp Supply, 732 Federal, Chicago 60605.

PRINTING Type, Cuts, Ornaments. Your Monogram Cut and list \$1.00. Moneyback Guarantee. Superior, Box 487, Lee's Summit, Mo. 64063.

PRINTING AND SUPPLIES

1000 EMBOSSED Business Cards \$6.25 Postpaid. Agents Wanted. Elco, 181-A, Sylvania, Ohio 43560.

FREE Literature, Business Cards, Letterheads, Labels. Rubber Stamps, Geer's, 111 North Drive, Ottawa, Ohio 45875.

FREE Literature: Rubber Stamps, Books, Business Cards, Printing, Labels. Jordan's, 552 West O'Connor, Lima, Ohio 45801.

AMAZING Printing Sales Catalog. Profit. Write: Victor, 707-P, Sharon, Pennsylvania 16146.

FOTOFOAM Printers \$4.95 up. Dealers wanted. Inventec, Box 128-B, Endicott, NY 13760.

WHOLESALE. Office Supplies, Equipment, Printing. Agents wanted. Atlantic, Box 1678-D, Florence, S.C. 29501.

EMBOSSED LETTERHEADS ENVELOPES—Distinctive—Inexpensive—Postpaid. Universal, 226-F Myrtle, Scotch Plains, New Jersey 07076.

BOOK PRINTING. Low cost, high quality, prompt delivery. Free estimate. Texto, Box 2988, San Jose, Costa Rica.

QUICK Copy Offset Printing. Free Introductory Offer. Nationwide Printing, 614 North Main, Bloomington, Illinois 61701.

GUMMED LABELS

1,000 BEAUTIFUL Gold Stripe Labels \$1.00. Marie's, 609 Elm, San Angelo, Texas 76901.

1000 GUMMED Address Labels \$1.00. Walt's, Box 960A, South Bend, Indiana 46624.

1,000 GUMMED ADDRESS LABELS \$1.00. FREE LITERATURE, 225 Self-Stick Labels \$3.25. Acme, 1238 Voskamp, Pittsburgh, Pennsylvania 15212.

REMAILING SERVICE

PENNSYLVANIA—Confidential Remails - 25¢ each. Box 197, Fairless Hills, Pa. 19030.

EXCLUSIVE Saratoga, remailing-forwarding, tailored terms, confidential. Details, Box 708, Saratoga Springs, NY, 12866.

WASHINGTON, D.C. Remails, Fast, dependable, confidential, 25¢, 5/\$1.00. Wood, P.O. Box 2126, Alexandria, Va. 22301.

ATLANTA—Receiving, Forwarding, Individuals, Business! Free Details. Liberator, 3404 Hill Drive, Duluth, Georgia 30136.

MOTOR CITY Remailing Service—all services available. **INFORMATION,** writer: M.C.R.S., Box 890, Dearborn, Michigan 48121.

UNLISTED ADDRESS. Discreet and confidential. Remail 25¢ single. Mail Forwarding Service, 8050 S. Main, Houston, Texas 77025.

YOUR Mail Received-Forwarded. Hedgpeth, 324-M South First, Alhambra, Calif. 91802.

ATLANTA—Prompt, Confidential remail, 25¢, PMB, Box 77208, Atlanta, Georgia 30309.

REMAILING 25¢, 5/\$1.00. See, 1557 E. 43rd St., Cleveland, Ohio 44103.

AFRICAN Airmails, \$1.00. Postcards 4 for \$1.00. Box 292 Kloof, Natal, South Africa.

REMAILING DIRECTORY \$2.00. International Remailing-Forwarding Association, P.O. Box 1744-M, Miami, Florida 33134.

ACAPULCO Remailing \$1.25. Marsan, Encino #1, Col El Roble, Acapulco Gro, Mexico.

MARYLAND—Received-Forwarded. 25¢. Confidential. Harvey, 13-A, Cassandra Court, Randallstown, Maryland 21133.

PROFESSIONAL, Secret, Secure Remailing Service. Box 1364K, Waukesha, Wi. 53186.

NORTH New York 25¢, \$4.00 Month. The Buccas, R.D. #3, Malta, NY 12020.

MISSOURI Remailings 25¢, \$3.00 Monthly. Everett Bausell, 908 Jefferson, St. James, Missouri 65559.

CADILLAC remail service remails 25¢ P.O. Box 15711 Seattle, Washington 98115.

SAFE CONFIDENTIAL—Forwarding . . . Remails 25¢. Winston, Box 15216-P5, Dallas, Texas 75201.

SPECIAL SERVICES

INFORMATION On anything. Ferguson Research Specialists. 60-15 Woodside, Woodside, New York 11377.

PROFITS FROM CLASSIFIED ADVERTISING! Booklet shows you how to start your own business with Classified Advertising. Only \$1.00 (Refundable with first order.) **H. E. KAPPEL, POPULAR MECHANICS, DEPT. P, 224 WEST 57TH STREET, NEW YORK, N.Y. 10019.**

INVENT 100 ITEMS—20 Items Per list—\$2.00, 5 Lists. Max, Box 330652, Coconut-Grove, Fla. 33133.

BETTER HEALTH

WORLD'S Most Outspoken Publication, Natural Health, Healing, Organic Gardening. Free Copy. Provoker Press, St. Catharines 102, Ontario. L2R 7G9.

EXERCISE At Home on build-it-yourself physical fitness equipment, including bicycle exerciser, rowing machine, belt massager, and abdominal board. Send \$5.00 for blueprints \$1208 and instructions. Popular Mechanics, Box 1014, Radio City, New York, N.Y. 10019.

STOP SMOKING! Helpful 1976 report! \$2.00. Frances Webster, 1268 Main Street, Waltham, Mass. 02154.

LOANS BY MAIL

BORROW by Mail! Up to \$3,000.00. Convenient terms. State Licensed, Postal Finance, Dept. 17-01, 6018 Maple Ave., Omaha, Nebraska 68104.

PERSONAL

TELEPHONE MONITOR! Record conversations automatically! Electronic flood, liquid, moisture alarm! AM/FM! Shortwave! PM2, Box 192, Griffith, IN 46319.

WHO Will get your Money? Form and Instructions \$2.00. Keller, Box 654, Lomita, CA. 90717.

LIVE LONGER Booklet reveals secrets of long healthy life. Send \$1.00. Rocel Ltd., Dept. 16, 4752 Haygood Point Road, P.O. Box 5574, Virginia Beach, Va. 23455.

SELF-DEVELOPMENT Practical stimulating books to help you achieve success, happiness and wealth. Send for free catalog. **LAUREL HOUSE,** 431 Gilbert Avenue, Hamden, Connecticut 06514.

INVESTIGATORS. Latest electronic aids. Clifton, 11500 N.W. 7th Avenue, Miami, Florida 33168.

STOP Electronic Eavesdropping! Security Catalog. \$1.00. McCord Electronics, Box 276-PM, Sylvania, Ohio 43560.

BECOME An ordained minister. Free ministerial credentials legalize your right to the title "Reverend." Write Church of Gospel Ministry, 486-P Skyhill Court, Chula Vista, Calif. 92010.

PSORIASIS SUFFERERS: DISCOURAGED: Write for Free important information that is helping thousands. Pixacol, Box 29277-PM, Parma, Ohio 44129.

BIBLE Questions answered. Stamped envelope. Bylon, 17167 Bentler, Detroit, Michigan 48219.

RECORD Telephone Conversation automatically. Leave Recorder Unattended. Robert's, Box 49-PM2, Parkridge, Illinois 60068.

ESCAPE From debts and bill collectors! Have AAA-1 credit everywhere. Free report reveals secret plan! Credit 4A2, 333 North Michigan, Chicago 60601.

ELIMINATE DEBTS! DETAILS 35¢ Guaranteed. **DEBTS-ZU,** 232 Front, Napoleon, Ohio 43545.

VETERANS! Collect \$1,000's little-known cash benefits and services! Amazing new Report shows how! \$2.00. Veterans Handbook, Box 19107-AB, Washington, DC 20036.

FREE Grants for craftspeople, artists, photographers. Up to \$15,000. Complete details. Send \$2.00 to: WinWren-PM, P.O. Box 10914, Eugene, OR 97401.

DON'T Die Without Making Your Will. 3 forms, instructions \$2.00, P2, Box 5225, Akron, Ohio 44313.

RECAPTURE The zest and sizzle of youth without drugs, hormones or far-fetched gimmicks. Satisfaction guaranteed. Send \$3.00 for recipe and instructions. Le Secret, P.O. Box 3243-W Cherry Hill, N.J. 08034.

KNOW Your I.Q. Test Yourself. \$2.00. Pineview, 93F Pinedge, East Moriches, NY 11940.

FINANCE YOUR DREAMS With Government and Foundation Grants. Free Details. **TOU-PM2** Tact Dept., 432 PCH, Hermosa Beach, California 90254.

"SUCCESS KIT"!!! 15 Booklets Teach Everything: Money-making, Mindpower, Personality, Health . . . Much More! Most Complete Self-Development Ever. Guaranteed—\$3.00. How-To Enterprises, 3009 Kings Lane, Nashville, Tenn. 37218.

NOW, YOU CAN LIVE LONGER! SECRETS of how to remain healthy and mentally alert. How to slow down the body's aging process. **ORDER NOW! DON'T DELAY** Booklet MO-55A, \$1.50. **TOP NOTCH PRODUCTS,** 7900 Boyd's Building, Dept. 55A, Kinsman, Ohio 44428.

WILLS! How To Make And Break Them—plus 3 will forms \$3.00. Senrab Enterprises, Box 09155A, Chicago, Ill. 60609.

SELF-IMPROVEMENT BOOKLETS, Free Catalog! Motivational Materials, Box 918, Crystal Bay, Nevada 89402.

FREE LIST Of unusual low cost self improvement books. L. J. Viserto, 690 Allerton Ave., Dept. 212, Bronx, New York 10467.

SAVE Money—Heartache—Make Your Will Now!! Forms And Instructions Guaranteed. \$2.00. Church, Dept. A2B, Drawer 508, Millers Creek, N.C. 28651.

(Continued on next page)

SOCIAL SECURITY PLATES

GOLD Metal Social Security Plate \$1.75 with Black Case and Identification Card. Send Name and Number to: George Anthony, PM2, 626 Clinton Street, Brooklyn, New York 11231. Money Order Only.

WANTED MISCELLANEOUS

MERCURY Gold, Silver, Platinum: Ores assayed. Wholesale Terminal, Norwood, Mass. 02062.

WINEMAKING & OTHER RECIPES

WINEMAKERS Free Illustrated Supply catalog of yeast, equipment. Continental, Box 68016-PM Indianapolis, Ind. 46268.

WINEMAKERS—Free Catalog. Fast Service. Large Selection! Kraus, Box 451L, Nevada, Missouri 64772.

WINEMAKING, Yogurt, Cheesemaking. Free catalog. Arbolyn, Box 663, West Columbia, S.C. 29169.

WINEMAKER'S Supply Catalog—Free. Bacchanalia, 273 Riverside Ave., Westport, Conn. 06880.

WINEMAKERS. Free Illustrated catalog of yeasts, equipment. Semplex, Box 12276R, Minneapolis, Minn. 55412.

WINEMAKERS Free Informative Catalog, Yeast Equipment, Ingredients, **DANENBERGER'S**, Box 276-M, New Berlin, Ill. 62670.

EASY To Prepare Your Own Liqueur In Minutes. Inexpensive—Over 40 Delicious Flavors. Send \$2.00—Making Your First Fifth. Olympia Import, 12414-M2 Buckeye Rd., Cleveland, OH 44120.

MOONSHINE! WHITE LIGHTENING! Rush \$1.00 for original recipe. McDuffy, Box 19365, Denver, Colorado 80219.

FREE! FREE! AMAZINGLY DELICIOUS!!! DARK GERMAN BEER RECIPES, with Purchase of our famous home Wine/Champagne recipe booklet. Money-back Guarantee. . . \$3.00. Leman Enterprises, Box 228-F, Santa Maria, Ca. 93454.

MISCELLANEOUS

WILLS! 4- Will forms . . . \$2.00. W. D. Sales, 116B Fraternity Drive, Lafayette, Louisiana 70501.

COUNTERFEIT Coins? Better Yet! 3" Super coins. Exact Metal Replicas. Fine Detail. Catalogs, Sample—\$1.25. Grayling Gemcraft, Box 613PB, Grayling, Michigan 49738.

CATALOGS! Receive many! Catalog Directory, \$2.00. Box 33098, Washington, D.C. 20028.

HEARING Aid batteries wholesale. Free list. Habs, Box 51, York, Penna. 17405.

BOOKS On antiques and their prices. Free circular! P. Warman Publishers. Uniontown, Penna. 15401.

ORNAMENTAL Iron designs. Book of 1600 beautiful, practical designs for railings, columns, etc. Free literature. Cunningham, 3881 South 3200 West, Box 20005, Salt Lake City, Utah 84120.

IDENTIFICATION CARDS. Send stamped self-addressed envelope for samples. MIPCOM, 727 North Main, Las Vegas, Nevada 89101.

WIN! Casino Games! Free Details! Xcito Games, 5715 N. Mozart, Chicago, Illinois 60659.

PRESCRIPTION EYEGLASSES. Free Catalog. A-Z Optical Company, Box 175, Dept. R26, Bay Station, Brooklyn, New York 11235.

BEAT BLACKJACK!! New Powerful method guarantees winning. Free Information. Sheridan, 7730-M2 Fair Avenue, Sun Valley, California 91352.

NOT GIFT Water-activated hand warmers \$4.99 . . . body warmers . . . \$8.99, guaranteed! Finley Enterprises, Dept. 1PM2, 738 Elmer, Southbend, Indiana 46628.

WILLS How to Make and Break Them Plus Two Will Forms \$3.00. AAA Products, 5003 Creeklane, Austin, Texas 78745.

GENUINE Jade Brooch \$12.95. Allow 6 weeks—delivery. R. Ayala, P.O. Box 228, Mott Haven Sta., Bronx, New York 10454.

100-CARD BIBLE GAME! \$1.00 Anywhere! Biblegame, 5837 Stewart, Sylvania, Ohio 43560.

IDENTIFICATION CARDS, Legal Forms. Free Samples. Documents, Box 26062T, Los Angeles, Calif. 90026.

BOWLING STRIKES, Send \$1.25. Bowling, P.O. Box 2012, Ft. Collins, Colorado 80522.

WILLS! Self-explanatory form now \$1.00—guaranteed!! Ronneco, 2C2, 315 3rd Street, Cloquet, Minnesota 55720.

HORSEPLAYERS—Free details "Amazing New System." Works great! Bryan, Box 1716-PM, Chula Vista, CA 92012.

DECLARATION Of Independence \$2.00!! 12 Burglar Alarm stickers \$2.00!! Infram Company, 1808-A York Dr., Columbia, SC 29204.

ROACH Bait Poison-Safe Children, Pets \$1.00. Bloemen, Brookport, Ill. 62910.

DOW Fertilizer Broadcasters Log Cradles, Pamphlet. Box 628, Conway, Ark. 72032.

PROTECT Your family! Self-Explanatory Blank Will form saves grief—high fees Only \$2.00 guaranteed! Order today!! Wills, Box 315, Utica, New York 13502.

NOW!! Only \$1.49!! Four will forms, PLUS Attorney's Instructions!! Guaranteed!! Buy Now! Trenk's Gifts, 468 East Ninth Street, Brooklyn, New York 11218.

FREE Details! Find your I.Q.!! PML0V, Dept. PM2-6, 2-290 Meadowbrook, King, N.C. 27021.

LIVING DEATH Can be avoided. Don't let machines control your destiny. \$2.00 guarantees future family protection. Testament, 2630 Glendower, Hollywood, Ca. 90027.

URGENT!! Husband And Wife Both Need A Will. Legal Will Forms That Are Easy To Fill Out—Have Complete Instructions And Guaranteed—Only \$3.00. Wills, Dept. A2A, Box 508, Millers Creek, N.C. 28651.

BURGLAR ALARMS & HOME PROTECTION

BURGLAR—Fire Alarm, Supplies and Information. Free Catalog. Protecto Alarm Sales, Box 357, Birch Run, Michigan 48415.

PROTECT Your Home and Family! Combination Fire/Burglar Alarm. Sensitive, Dependable. Easy Installation! Only \$9.95—Guaranteed! D&G Products, (IA2) Box 869, Soldotna, Alaska 99569.

DIALING Unit automatically calls police. \$29.95. Free literature, S&S Systems, 5619-D St. John, Kansas City, Mo. 64123.

GIANT WHOLESALE CATALOG Of Burglar & Fire Alarm Equipment & Supplies. Send \$1.00 for catalog, refundable with first order. Armco, 163 Union Street, Westfield, MA 01085.

DOUBLE DUTY ALERT is an electronic alarm that protects you against intrusion and fire. Wards off intruders and vandals with a penetrating siren type alarm that waits when door is opened. Portable or permanent installation possible. Heat sensor triggers automatically when interior temperature reaches 135°F. Can remain activated without resetting for round the clock protection. Installs in minutes on any inward or outward opening door. Send \$7.95 today—Ten day money back guarantee!! MA ROOT, 201 St. Laurence Road, Dept. 1A2, Upper Darby, Pa. 19082.

THEFT FIRE PROTECTION—Complete Kit to mark and record your valuables. Scriber, invisible and permanent ink Pens, Warning Decals, Instructions. \$9.95 plus 50¢ handling. Money Back Guarantee. MARK-IT, Box 246, Dept. AF, Dayton, Ohio 45405.

BE SAFE 24 HOUR BURGLARY/FIRE PROTECTION. "DOUBLE-DUTY ALERT" has 2 protective signals! Siren-like alarm alerts against break-in or fire danger. Compact, battery-powered. Permanent or portable installation. Ideal for homes, apartments, etc. Ready-to-operate! 10-day MONEY BACK GUARANTEE. Just \$9.95 ppd. w/batteries. Hahn Enterprises, Dept. 1B2, 122 Farallone St., San Francisco, Ca. 94112.

NOW Available! Wholesale, Professional, Burglar-Fire Alarm Equipment for the Do-It-Yourselfer. Catalog 25¢. Emel Electronics, PM2, Box 509, Flushing, N.Y. 11365.

FLEA MARKETS- \$300.00 days are EASY!

2nd Big Printing
A fantastic book
of PROVEN
FACTS
FROM TOP
EXPERTS!



Make big money fast using the incredible inside tips described in these remarkable 90 pages. It could end your money problems forever! You'll be astounded . . . it tells EVERYTHING worth knowing about making huge profits at Flea Markets. And any beginner can do it! DON'T WAIT! Satisfaction guaranteed. Regularly \$6.00

Introductory offer: only \$4.95

The Victory Press, Dept. PM-1

14640 Victory Blvd., Van Nuys, CA 91401

GARAGE DOOR OPERATOR...\$9995!

- RADIO CONTROLLED from car transmitter as well switch
- SAFETY night and day year 'round
- SECURITY door locks tight when closed
- CONVENIENCE in car control any weather
- LIGHTING garage lights automatically
- VERSATILE fits all lifting type wood, metal or fiberglass doors sectional and 1-piece
- EASY HOME INSTALLATION in just 2-3 hours
- SAVE up to 50% direct factory purchase and PP or UPS home delivery
- GUARANTEED one year
- FREE brochure

HELPMATE Equipment Co., Box 4190, Eureka, MI 49101

MOLDS
for making
Ornamental Concrete
Items...

Book about Aluminum Molds with prices and production trade secrets direct from world's largest mold manufacturer.

SEND \$3.00

CONCRETE MACHINERY COMPANY, INC.
P.O. BOX A99 - HICKORY, N.C. 28601

FIND BURIED TREASURE

Powerful electronic detector finds buried gold, silver coins, etc. Write or call for free catalog. Dealer inquiries invited.

Financing Available
Phone day - night (713) 682-2728
RELCO, Dept. 0042
BOX 10839, HOUSTON, TEX. 77018

Print Your Own

Cards, Stationery, Advertising, Labels, Tickets, announcements, QSL cards, greeting, sympathy, prayer cards, etc. Save money. Print for others, good profit. Have home print shop. Pays for itself in a short time. Sold direct from factory. Easy rules sent. We supply everything. Send \$2 for catalog. **KELSEY PRESSES** Meriden, Conn. 06430

MAIL THIS COUPON TODAY Kelsey Presses Dept. 76-88 Meriden, Conn. 06430

1 enclose 25¢ send big catalog and free samples.

Name _____
Address _____
City _____ State _____ Zip _____

BASEMENT TOILET

Flushes up to existing sewer or septic tank by powerful, self-contained pump operated by normal water pressure. No digging up floors. Clog resistant, easily installed. Make basement into game room, den, apartment with private bath. Financing available. Write for free literature. Dealer inquiries invited. **SANDERS**, Dept. J-25, Box 92102, Houston, Tx 77206.

METAL/MINERAL DETECTORS

WORLD-FAMOUS QUALITY

Over 24 models priced from \$19.50 with budget items available. World's leading maker of fine instruments. Write us today for our dealer listing.

1011 PLEASANT VALLEY RD. SWEET HOME, OR 97306

DON'T JUNK THAT VINYL SOFA — FIX IT!

Repair any Vinyl Furniture, car top or car interior, luggage, etc. Match 55 colors and any grain invisibly and permanently. Complete kit contains everything you need, including explicit instructions. Send \$9.95 to the L & P Company, 19 Woodvale Road, Madison, Ct. 06443. Money back guarantee.

PROFESSIONAL VINYL REPAIR

QUICK! BIG PAY!

Make a good \$20 for each hour's work in your own business, part time or full time . . . 24 hours after you get big low-cost VIP Vinyl Repair kit. Professionally repair and restore vinyl, naugahyde. Quick, easy. Big demand. Homes, businesses, car shops, restaurants, unlimited customers. No waiting, no school, no franchise, you keep all profits. Big fast steady earnings. Details mailed FREE. VIP, Dept. 186, 2021 Montrose, Chicago, Ill. 60618.

LOOKING FOR IDEAS ON HUNTING, FISHING, CAMPING, BUILDING, TOOLS, ETC.? CHECK THESE LISTINGS, THEN USE THE COUPON BELOW.

WORTH WRITING FOR

475. Aiming For the Best?

You'll be right on target with the new four-color Browning catalog. Over 100 pages packed with meticulously crafted rifles, shotguns, pistols, and other sporting equipment. Free.

476. Winnebago Motor Homes

Offers a color brochure showing floor plans and specs on each of its products. Plus the name of the nearest dealer and details on the exclusive Homeowners Plan. Free.

477. Be A Repair Master!

Can you handle an electrical emergency, repair your roof, silence squeaky floors, and cur fuel bills? Now you can! The fully-illustrated POPULAR MECHANICS Master Home Care Guide will show you how to speed through these and scores of other costly home repairs. In step-by-step format and spiral bound for easy use. \$4.95.

478. Fun Filled Catalog

New, world famous catalog of 1,600 hard to get novelties, jokes, tricks, hobbies, sports, science, electronics, emblems, posters, bargains, and many more. From Johnson Smith Co. 10¢.

479. Hot Tips For Propane Torches . . .

Fill Turner's information-packed, 25-page "Propane Torch Guide". It includes: operating and maintenance principles, Burner Tip Selection Guide, Soldering Chart, and more. Only 25¢ plus 10¢ postage and handling.

480. Tackle The Tough Ones . . .

With the high quality rods, reels, and fishing gear you'll find in this full color, Hardy catalog. It's a sure lure for any angler. \$1.

481. Garden Tillers

Here are the popular rear-tined power drive tillers for one hand operation, and front-tine, chain drive tillers for the serious gardener. Great for large and small gardens. Free literature from AMERIND-MacKISSIC.

482. Stop Dripping Faucets Forever:

Learn all about the Vulcan Universal Faucet Reseating Kit. Instructional Material (containing a sample stainless steel seat & Delrin washer) describes how the Vulcan kit will permanently repair any faucet that uses washers. Only 50¢ (which will be refunded with kit order).

483. A Matter of Taste

United States Tobacco offers a free booklet that explains how to get maximum enjoyment from smokeless tobaccos plus a few free pinches to try.

484. Nailing It All Down

You'll know at a glance which nail you want with this illustrated, 4-page folder from Wheeling Corrugating Co., makers of La Belle Cut Nails. Free.

485. Fly Rod Fishing Made Easy

Here's a 36-page booklet from Cortland Line Company that breaks fly rod fishing into simple steps—from balancing equipment and simple knots to which fish to catch on a fly rod. 25¢.

486. Getting Down To Basics

Here's a free 14-page flyer from Savogran giving common sense help with the fundamentals of redecorating including stripping, repairing, patching, and cleaning surfaces. Only 10¢.

487. Gardening The Organic Way

This fact-filled, 20-page booklet based on practical experience explains how soil is formed and can be enriched. Crop and flower growing suggestions included. Free from Gilson Brothers Co.

488. Master The Art of Magic . . .

From sleight of hand to stage illusion with the Mark Wilson Course In Magic. Sample lesson and full color brochure giving course description only \$1.

489. Protect Your Buildings . . .

From termites and decay with Wolmanized pressure-treated lumber. A free 16-page booklet from Koppers Co., Inc. gives details.

490. If You're Going Places . . .

Here's a colorful booklet from Itasca Motor Homes that gives specs and features and describes each floor plan. Plus the name of the nearest dealer. Free.

491. 1975 Popular Mechanics Index & Shelf Wrapper

Actually converts your '75 PM issues into a complete "reference library". Thousands of entries from the past year are cross referenced and built into a handsome and sturdy lacquer board shelf wrapper—now in new larger size. Only \$2.69.

492. On The Air

Cobra Communications offers a full color flyer covering ten radios for two way citizen band radio communications with complete details on features, power requirements, dimensions, and weight of each unit. Free.

493. Linking Together Safety and Style

Anchor "PermaFused" vinyl coated chain link fabric and handsome gates and posts can help fence trouble out. Free four color brochure and sample wire.

494. Set Your Sights . . .

On Redfield's new 1976 catalog—26 full color pages of precision optics for hunting and target shooting, including rifle scope, mounts, sights, and optical accessories. Plus Scope Buyers Guide. Only 25¢.

Popular Mechanics 276
Box 1718, Sandusky, Ohio 44870

This Coupon Expires April 30, 1976

Please see that I receive the items checked below. I have enclosed 35¢ for the overall service charge, plus remittance for any priced items.

<input type="checkbox"/> 475	<input type="checkbox"/> 478 (10¢)	<input type="checkbox"/> 481	<input type="checkbox"/> 484	<input type="checkbox"/> 487	<input type="checkbox"/> 490	<input type="checkbox"/> 493
<input type="checkbox"/> 476	<input type="checkbox"/> 479 (35¢)	<input type="checkbox"/> 482 (50¢)	<input type="checkbox"/> 485 (25¢)	<input type="checkbox"/> 488 (\$1.00)	<input type="checkbox"/> 491 (\$2.69)	<input type="checkbox"/> 494 (25¢)
<input type="checkbox"/> 477 (\$4.95)	<input type="checkbox"/> 480 (\$1.00)	<input type="checkbox"/> 483	<input type="checkbox"/> 486 (10¢)	<input type="checkbox"/> 489	<input type="checkbox"/> 492	

Total items requested _____ Total money enclosed (including 35¢ service charge) _____

Name (Please Print) _____

Address _____

Town _____ State _____ Zip Code _____

(Please send cash, check or money order made out to POPULAR MECHANICS. No stamps, please.)

Note: Popular Mechanics processes your requests for the above information and forwards these inquiries to the organization making the offer. Each company mails the material directly. Please allow 4-6 weeks for delivery.



Try Black Velvet on this weekend.

Until you've tried it, you just can't know how light
and smooth a whisky can be. Black Velvet® Canadian Whisky.
A premium import. At a slightly premium price.
Just enough to separate the men from the boys.



BLACK VELVET IS BLENDED CANADIAN WHISKY 80 PROOF IMPORTED BY © 1976 HEUBLEIN, INC. HARTFORD, CONN.

Must be 21 years of age or older to purchase or consume.

THE COMPACT FISHING MOTOR THAT'S SOMETHING ELSE.

Picture a 35 horsepower motor the size of a conventional 20.

A motor you can ski with, yet fits in the trunk of a compact car.

A family motor. Big enough for family-size boats, small enough for family-size budgets.

It's Evinrude's new 35. A precision fishing machine with speed and range to get to the good spots ahead of the crowd. And the ability to throttle down to dead slow trolling when you get there.



Lakeshore dwellers will love the way it combines jack-of-all-sports versatility with fuel saving efficiency and economy.

It does things no motor its size ever did before.

It's versatile because it's designed that way—with high-torque power, power gearing, and a high-performance Nitro-Series lower unit.

The Evinrude 35 comes in electric or rope start models.

It runs a lot bigger than it looks.



EVINRUDE
DIVISION OF OUTBOARD MARINE CORP.
first in outboards